

Chapter 5

A Syntax-Semantics Mapping Approach to Suffixal Quantification

1. Overview

Previous analyses on *-hoi1*, *saai3* and *maai4* highlight their non-aspectual nature, which makes them distinct from aspectual markers like perfective marker *-zo2*, experiential marker *-gwo3*, imperfective marker *-zyu6* and progressive marker *-gan2*. However, the problem is even if it is correct to claim that aspectuality cannot be the basic meaning of the three suffixes in question, their basic semantics remains mysterious. Previous analyses have given various meanings to each of them, but so far no unified meaning has been provided to any of them. Moreover, assuming these three suffixes are non-aspectual in nature, one would like to know the basic semantics of these suffixes, and how their semantics interacts with their suffixal nature?

In this chapter, I will show that these three suffixes are in fact quantifiers, and they perform generic, universal and additive quantification, respectively, demonstrating an interaction between morpho-syntax and semantics. Most importantly, I will argue that suffixal quantification is highly grammaticalised, with the relevant syntax-semantics mapping different from Diesing's Mapping Hypothesis and Tsai's Extended Mapping Hypothesis. Instead of a TP-vP splitting, suffixal quantification gives a different mapping mechanism: their mapping is determined by the grammatical function hierarchy derived in Chapter 4. However, there is no unified mapping for all suffixal quantifiers, with the relevant tripartite structure mapping determined by individual suffixal quantifiers: for *saai3*, the constituent selected from the hierarchy is mapped to the restrictor, with everything else to the nuclear scope; on the other hand, for *maai4* and *-hoi1*, the constituent selected from the hierarchy is mapped to the nuclear scope, with everything else to the restrictor.

2. Verbal Suffixes as Quantifiers

What is peculiar about the verbal suffixes is that they are morphologically attached to verbs, but are semantically possible to interpret with all verbal arguments. These suffixes are essentially quantificational, since it is from the suffix that the quantificational meaning of the sentence in question is derived. However, being quantificational in nature, the status

of these suffixes is still open to various possibilities, making them not necessarily quantifiers. Out of these possibilities, we need to mention at least two: (i) treating them on a par with verbal complements, like 完 ‘finish’, 好 ‘good’; and (ii) considering them as performing predication over events.

Firstly, from the general hierarchy, we can see that the scope of these suffixes can be extended as far as to the subject. This demonstrates their non-complement nature. Since if they are complements, they should be frozen in form and non-scope taking, which is not consistent with the fact. In fact, the hierarchy reveals that the quantification of suffixal quantifier not only can apply to arguments, but also possible to extend to locative adjuncts, preverbal PPs and even the verbal/adjectival predicates.

Secondly, one potential argument against the quantificational approach is to consider these suffixes predicating over events. If this is really the case, it will be predicted that the relevant meaning conveyed by these suffixes will be applied to the event. Such a prediction is ruled out by the following.

(1) 佢 食晒 啲嘢.

s/he eat-SAAI the-food

- (a) “S/he has completed the event of eating the things, but there is still some food remaining.”
- (b) “S/he has finished all the food.”

Predication over events will give the interpretation in (1a), where *saai3* will give a completive sense to the event. Hence, what is required in (1a) is the eating event has completed, and whether the food is completely consumed or not is not at issue here. On the other hand, adopting the quantificational approach, we can see that *saai3* is taken to be a universal quantifier, which quantifies over the object NP, as predicted by the general hierarchy. Hence, what is required in (1b) is a total consumption of the food, and whether the eating event is completed or not is not at issue here. The interpretation of sentence (1) confirms that only (1b) not (1a) will give a correct interpretation to (1), and hence, *saai3*, and *maai4* and *-hoi1* at large, should be considered as quantifiers.

Considering verbal suffixes as quantifiers, we should answer the following questions.

- (i) What exactly does the suffixal quantifier quantify over?
- (ii) How is the syntax of these suffixes mapped to their semantic representations?

2.1 The Role of Syntax in Suffixal Quantification: Explaining the General Hierarchy

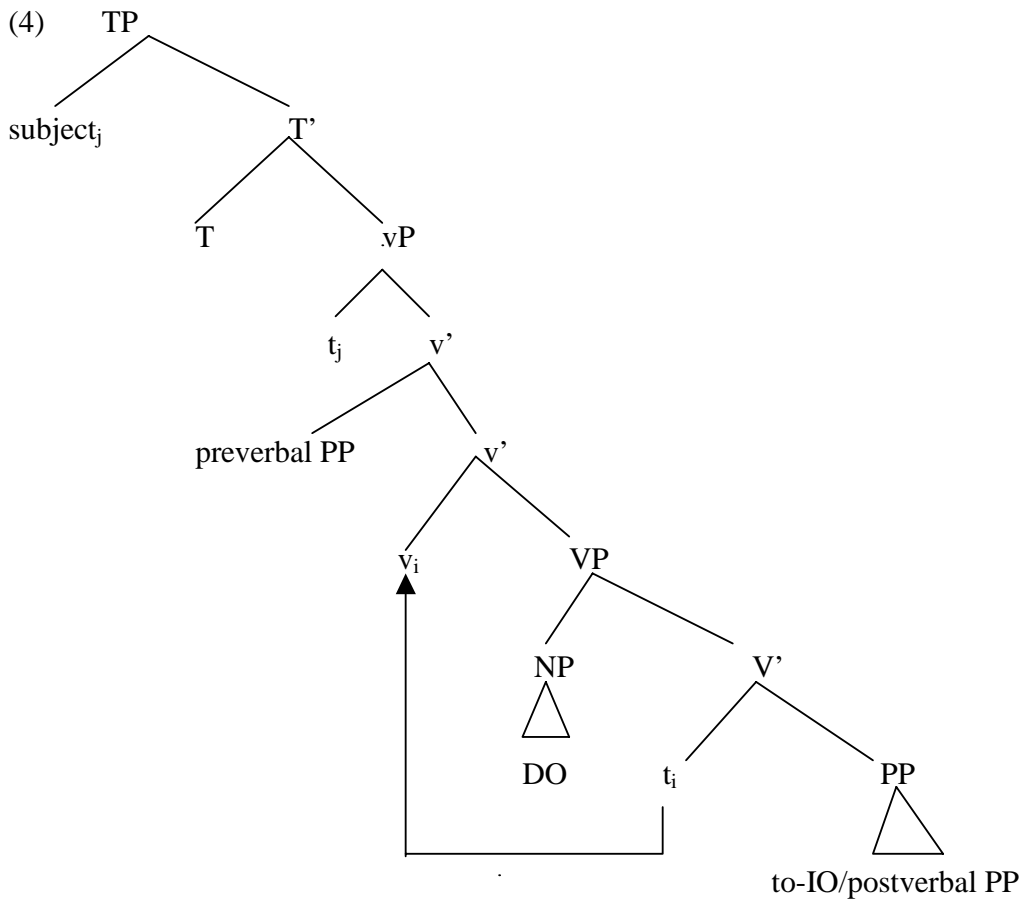
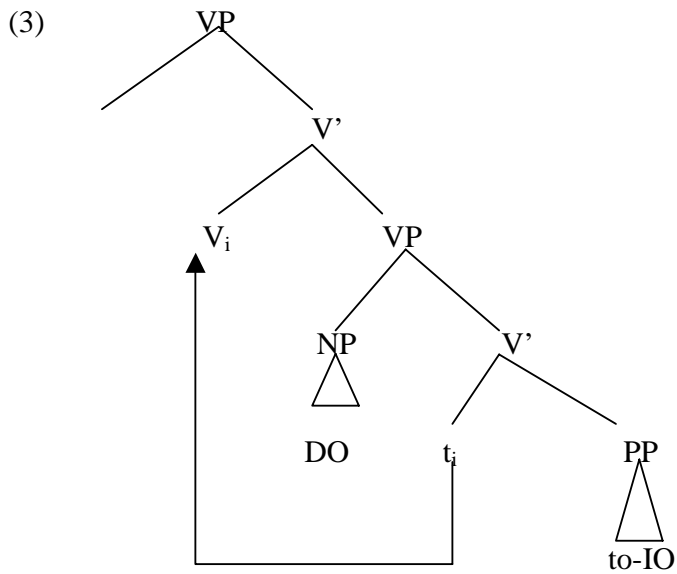
Suffixal quantification demonstrates a strong interface between syntax and semantics, with relevant semantic representations crucially determined by syntactic constituency. As I have shown in Chapter 4, suffixal quantification is performed according to a general hierarchy, which is repeated as follows.

(2) A General Hierarchical Order of Association in Suffixal Quantifiers

DO/IO arguments > dative arguments/postverbal PPs > preverbal PPs (V-licensed PPs) > subjects > verbal predicates/adjectival predicates/stative verbs/VOs

(2) demonstrates the general hierarchical order of argument association in suffixal quantification, when all arguments are potential candidates, satisfying the selectional restrictions of the affixes. The relevant association is subject to the selectional restrictions and the semantics of particular affixes. (2) simply shows that when a certain suffixal quantifier can go with all verbal arguments, the hierarchical order will be that of (2), i.e. the argument higher in the hierarchy will be selected over the ones lower in the hierarchy. Moreover, when there is no appropriate argument in the sentence, association of the suffix with the verbal and adjectival predicates or the temporal phrases will be the last resort.

From the hierarchy proposed, we can predict that the quantification by these suffixes demonstrate a locality constraint. The relevant suffix will select the constituent closest to the verb, that is, the DO, with the remaining constituents, which are dative arguments, preverbal PPs, subjects, interpreted in their hierarchical order according to their distances from the verb. Modifying Larson's (1988) proposal on the structure of dative construction in (3), we can have the general hierarchy represented in the syntactic structure in (4).



Putting aside the issue whether subjects are base-generated at [Spec, TP] or [Spec, vP], I will simply assume the position of the subject at [Spec, TP]. Gleaned after verb movement from V to v, the suffix quantifies over the appropriate constituent according to their

distance from the verb. The selected constituents must match the features required by the selectional restrictions of the relevant affix. Based on the structure in (4), we can see that the following two are the natural consequences derived from the syntactic structure.

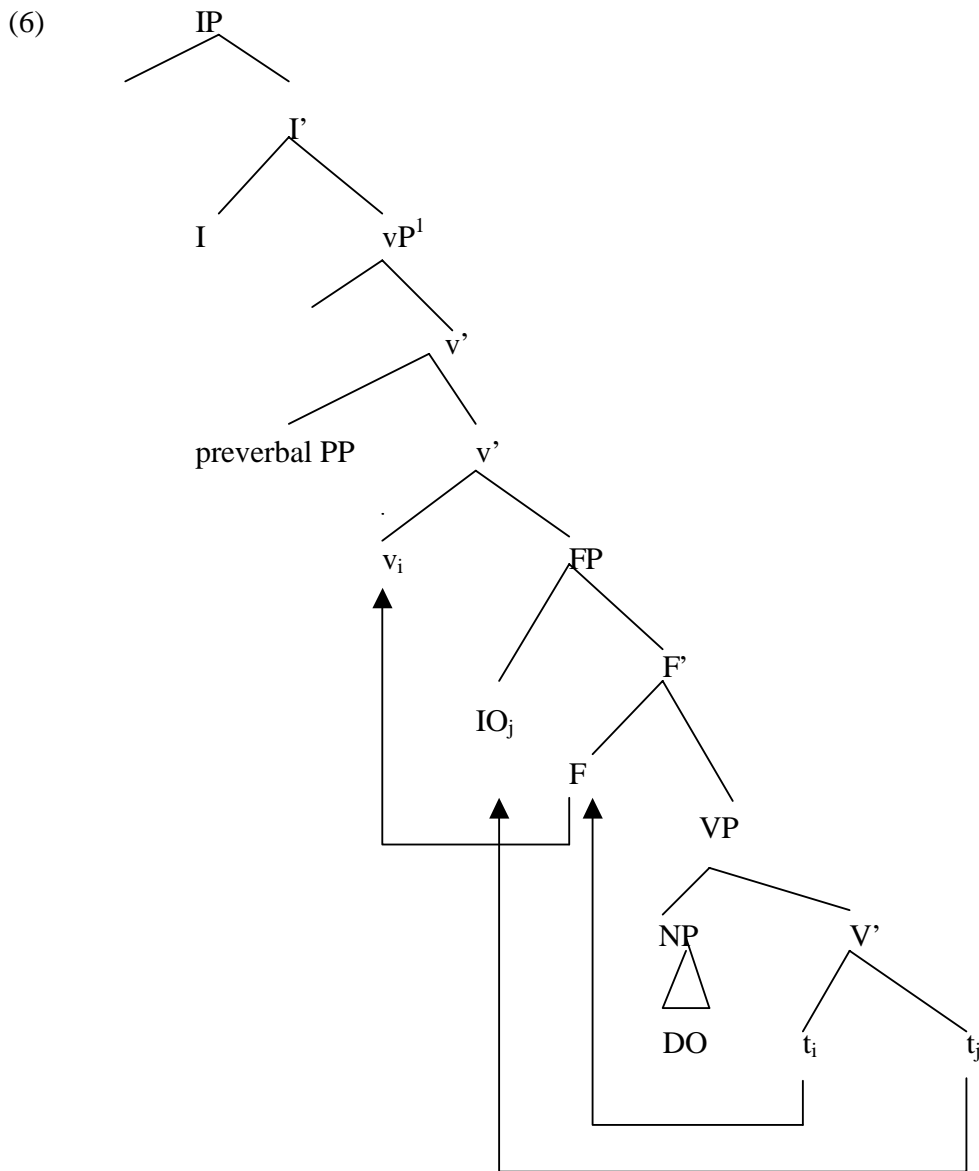
- (i) Suffixal quantification demonstrates a syntactic hierarchical order of objects over subjects.
- (ii) Compared with dative arguments and preverbal PPs, after verb movement from V to v, DO is closer to v than the dative arguments and the preverbal PPs. This explains the priority of selecting DOs over IOs and PPs.

(i) can be easily accounted for, since the subject, no matter whether it is positioned in [Spec, vP] or [Spec, TP], is definitely more distant from the verb than the internal arguments, which are located within the inner VP shell. On the other hand, for the hierarchical order between DOs and IOs & PPs, as seen from (4), after verb movement from V to v, DO is closer to the verb than IO, and hence, DO should occupy a higher position in the general hierarchy than the dative argument. In the case of preposed DO in the OSV structure, as I have shown earlier, since the affix fails to interpret with base-generated topic, which is a TP-adjunction, the association of the affix with the preposed DO under such a case must be an association with the trace left by the DO in its original position, that is, [Spec, VP]. The ability of suffixal quantification to interpret with the trace left by the preposed DO has led us to conclude the following in Chapter 4.

(5) Selection of Suffixal Quantifiers over Verbal Arguments

Suffixal quantification can be performed over both covert and overt verbal arguments.

The hierarchical order of DOs over dative arguments disappears when there is no dative marker in the IO, that is, in the DOC pattern. This is what will be predicted according to the structure given below in Tang (2003).



According to Tang, F is the affixal head which can stimulate movement of IO, and it is this affixal feature that forces IO to move to [Spec, FP] which is the phonological edge of FP. After moving to [Spec, FP], the IO can then receive proper semantic interpretation at that position. The hierarchical order between DO and IO is due to the far-away distance of the IO from the verb at SS, as shown in (4). However, (6) reveals the structure of the DOC pattern, which has the IO moved from its original position in the lowest VP to the [Spec, FP]. Hence, the IO occupies a relatively closer position to the verb in the DOC pattern than in other dative constructions.

¹ I have modified Tang's syntactic representation to accommodate our current discussion. The upper v' and v_i are original V' and V_i is Tang's tree.

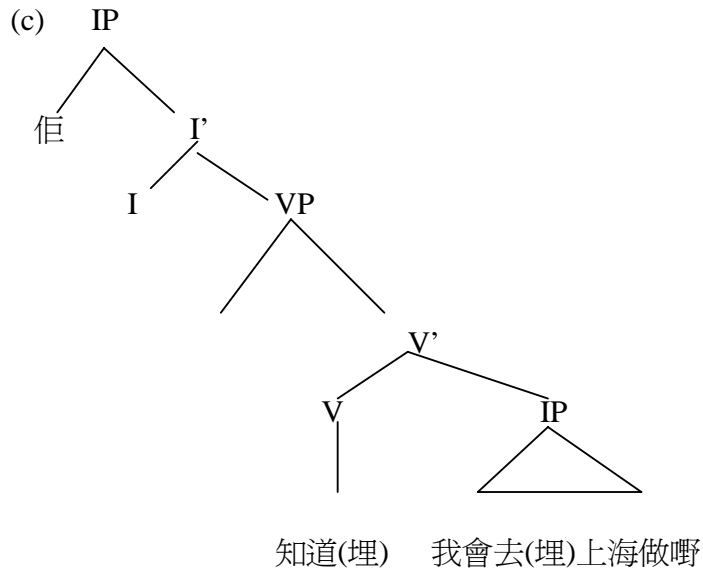
Concerning the case of adjectival predicates, the structure for verbal predicates in (4) also applies to adjectival predicates and statives. In such a case, since these predicates generally do not take a DO or a dative argument, the selection of NPs will be determined according to the following order: preverbal PPs (v-licensed PPs) > subjects. Notice that in the case of stative predicates, the adjectival predicates do not necessarily carry an object, while in the case of stage-level stative verbs where it is possible to have a DO, the relevant representation will resemble that of verbal predicates in (4).

From the above, we can see that the general hierarchy in fact demonstrates a kind of grammatical function hierarchy. Syntax plays a significant role in suffixal quantification by determining the hierarchical constituency of quantification. Hence, as I will discuss later, even though the mapping of these suffixes into tripartite structures is determined by the basic meanings of the suffixes themselves, the relevant mapping has to operate under such a syntactic hierarchy. Therefore, syntax and semantics cannot be viewed as discrete components, at least in the case of suffixal quantification, which is highly grammaticalised.

2.2 Structural Locality of Verbal Suffixes

The examples below further confirm that suffixal quantification is subject to a structural locality constraint. I will use *maai4* as an example. *Maai4* can be placed either in the main clause or in the complement clause in (7) to give different additive meanings to the relevant sentences.

- (7) (a) 佢 知道埋 我會 去上海 做嘢.
 s/he know-MAAI I will go-Shanghai work-things
 “S/he knows I will go to Shanghai to work as well.”
- (b) 佢 知道 我會 去埋上海 做嘢.
 s/he know I will go-MAAI-Shanghai work-things
 “S/he knows I will go also to Shanghai for work.”



- (8) (a) 佢 認埋 暗戀過 阿明.
 she admit-MAAI admire-Exp Ah-Ming
 “She also admits that she has secretly admired Ming (before).”
- (b) 佢 認 暗戀埋 阿明.
 she admit admire-MAAI Ah-Ming
 “She admits that she has secretly admired Ming as well (before).”

In (7a) and (8a), *maai4* attaches to the verbs 知道 ‘know’ and 認 ‘admit’ in the main clauses, while in (7b) and (8b), *maai4* attaches to the verbs in the complement clauses 我會去上海做嘢 ‘I will go to Shanghai to work’ and 暗戀阿明 ‘secretly admire Ming’, respectively. In (7a) and (8a), *maai4* takes the complement clause as DO, and adds the relevant event or entity denoted by it to the relevant set. The interpretation of (7a) is “apart from something else, s/he has also learnt that I will go to work in Shanghai”, while that of (8a) is “apart from something else, s/he has also admitted that she secretly admires Ming”. Therefore, what is added in these two sentences are the DOs of 知道 and 認, respectively, that is, nominalised IP or VP within the local domain of the verb.

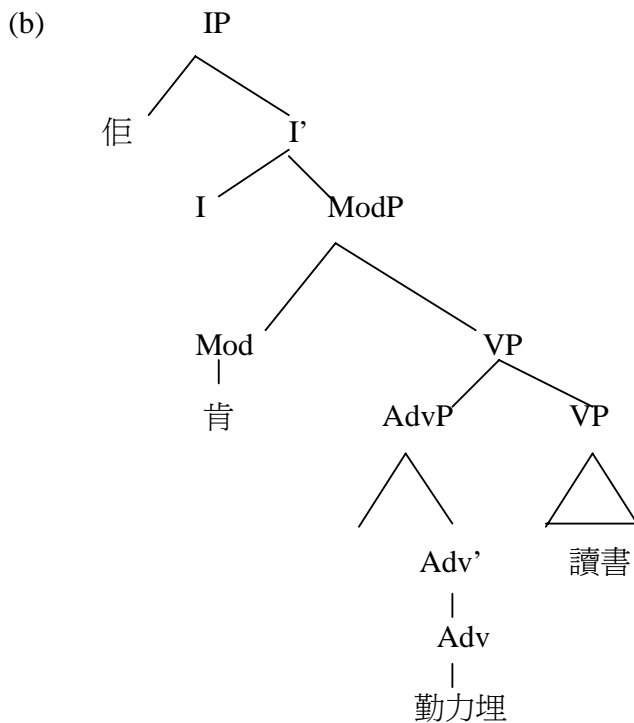
On the other hand, in (7b) and (8b), since *maai4* is attached to the verb in the complement clause, it associates with the DOs in the complement clauses, which are 上海

‘Shanghai’ and 阿明 ‘Ah-Ming’, respectively. The interpretation of (7b) is “s/he has learnt that I will also go to Shanghai (besides other places) for work”, while that of (8b) is “s/he has admitted that s/he also secretly admires Ming (besides someone else)”. Therefore, what is added is the place “Shanghai” in (7b) and the individual “Ming” in (8b), to the sets “places where s/he is going for work” and “individuals s/he secretly admires”, respectively.

The above shows that *maai4* can only interpret with the respective DO in the main clause or in the complement clause, depending on whether it is suffixated to the upper verb or the lower verb. Hence, in the (b)-sentences in (7) and (8), since *maai4* attaches to the verb in the complement clause, its domain is constrained within the complement clause, the local domain for *maai4*.

The example below further demonstrates the local domain of *maai4*.

- (9) (a) 佢 肯 勤力埋 讀書, 就 好 啦.
 s/he will diligently-MAAI study then good SFP
 “If she studies also diligently, it will be great.”



(9b) shows that *maai4* only c-commands the AdvP 勤力 ‘diligently’, and the domain of *maai4* is restricted to the AdvP, which fails to extend or include elements in the verbal predicate 讀書 ‘study’. Hence, *maai4* associates with the AdvP, rather than the verbal

predicate 讀書. Examples like (9) confirm that the domain of *maai4* is local. The locality of *maai4* gains further support in examples like (10).

(10) 佢 喊到 個枕頭 濕埋.

s/he cry-arrive CL-pillow wet-MAAI

“S/he cried so fiercely that the pillow as well had got wet.”

In (10), the verb involved in the secondary predicate is an intransitive verb, and *maai4* is found to associate with the grammatical subject 個枕頭 ‘the pillow’ in the secondary predicate, showing that *maai4* is restricted to its local domain. Notice that 個枕頭 here is in fact base-generated at the DO position, since 濕 ‘wet’ is an unaccusative verb. Hence, *maai4* interprets with the DO trace left over by the grammatical subject, as suggested by (5). The reading of (10) is “s/he cried and made the pillow (besides other things like the blanket) wet”.

From the discussion above, we can see that syntax plays two significant roles in suffixal quantification: (i) it determines the syntactic hierarchy for suffixal quantification; and (ii) suffixal quantification is subject to a locality constraint.

3. The Blocking Effect of Subject Quantification

As I have mentioned in Chapter 4, one interesting fact concerning suffixal quantification is the blocking effect imposed by verbal operators like *dak1* and the negator *m4* on subject quantification. Such a blocking effect can be explained if we take into account the scope interaction between the suffixal quantifier and other logical operators. Before explaining how such a blocking effect arises, we need to examine the scopes of suffixal quantifiers.

3.1 A vP Scope for *-hoi1* and *maai4*

The basic facts of suffixal quantifiers discussed in Chapter 4 show that some suffixal quantifiers but not all are free to associate with the subject. Neither *-hoi1* nor *maai4* can quantify over the subjects, and hence, they should share a similar scope. In the case of *-hoi1*, the examples below show that *-hoi1* never associates with the subject, even

though there is no operator blocking it.

- (11) (a) *呢幾間醫院 死開 阿明.
 this-few-CL-hospitals die-HOI Ah-Ming
 (b) 呢間醫院 死開人.
 this-CL-hospital die-HOI people
 “People die in this hospital.”
- (12) (a) *佢哋 琴日 贏開 頭場.
 they yesterday win-HOI the-first-game
 (b) 佢 贏開波.
 s/he win-HOI-games
 “She wins ballgames.”
- (13) (a) *啲學生 發現開 嗰個秘密.
 students discover-HOI that-CL-secret
 (b) 我 發現開 佢嘅秘密 / 秘密.
 I discover-HOI his/her-secret/secrets
 “I discover his/her secrets/secrets.”

The sentences above involve the “once-only” predicates, and the contrast in grammaticality between the (a)- and (b)-sentences demonstrates that only plural objects not plural subjects can make the sentences well-formed. This suggests that *-hoi1* fails to associate with the subjects. On the other hand, the ability of *-hoi1* to associate with the preverbal PP demonstrates a possibly vP scope for *-hoi1*. This prediction gains support when we consider the interaction between *-hoi1* and *mou2* and *m4*.

- (14) (a) %我 唔食開煙.
 I not-eat-HOI-cigarettes
 (b) 我 冇 食開煙.
 I not-have eat-HOI-cigarettes
 “I do not have the habit of smoking.”

(15) (a) %我 唔打開 網球.

I not-play-HOI tennis

(b) 我有 打開網球.

I not-have play-HOI tennis

“I do not have the habit of playing tennis.”

The contrast in acceptability between the (a)- and (b)-sentences above shows that *mou2* has scope over *-hoi1*, while *m4* is likely to have a scope crash with *-hoi1*. As I will show later in section 2.2, while *mou2* takes scope over *m4*, *m4* has a scope of vP. The interaction among *-hoi1*, *mou2* and *m4* demonstrates that the scope of *-hoi1* cannot be wider than vP. This is a reasonable assumption, since *-hoi1* fails to associate with the subject. Therefore, although *-hoi1* can associate with the preverbal PP, its failure to associate with the subject and its narrower scope with respect to *mou2* reveals that the scope of *-hoi1* is at most vP. The examples below demonstrate the interaction between *-hoi1* and modals/Q-adverbs.

(16) 佢 可能食開魚翅, 所以食唔慣 呢啲粗嘢.

s/he may eat-HOI shark fins so eat-not-used-to these-raw-food

(a) % “When s/he is possible to eat something, s/he eats shark’s fins.”

(b) “It is the possible that when s/he eats something, s/he eats shark’s fins.”

(17) 你 好明顯 著開 嗰件紅色衫.

You obviously wear-HOI that-CL-red-shirt

(a) % “When you obviously wear something, you wear that red sweater.”

(b) “It is obvious that you habitually wear that red sweater.”

(18) 佢 專登 著開 嗰件紅色衫, 刺激你.

s/he deliberately wear-HOI that-CL-shirt annoy-you

(a) ?? “When s/he deliberately wears something, s/he wears that red sweater.”

(b) “It is deliberately for him/her to habitually wear that red sweater.”

The unnaturalness of (17a) demonstrates that *-hoi1* has a smaller scope than the modal which should take a TP scope, cf. section 3.3. (17a) and (18a), which represent the readings where we assume *-hoi1* takes a wider scope with respect to the T-licensed adjuncts, give us unnatural interpretations. Hence, *-hoi1* should take a narrower scope than these T-licensed

adjuncts.

A similar account can be extended to *maai4* which can associate with preverbal PPs but not likely with subjects. However, unlike *-hoi1*, the quantification of *maai4* over the subject can be achieved through focus effect. Hence, when there is no focus, we can assume that *-hoi1* and *maai4* are likely to take a vP scope or the upper VP-shell. Hence, like *-hoi1*, the scope of *maai4* is predicted to be vP, which gains support in its interaction with negators, and other logical operators. Observe the *maai4*-sentences below.

(19) 佢 冇 食埋 嗰幾個蘋果.

s/he not-have eat-MAAI those-few-CL-apples

(a) $\%ADD_{x \in X} = |\{y | \sim[\text{Eat}(s/he, y)]\}| > 1$ [s/he has not eaten x] [x = apples]²

Lit.: “For a set of things s/he has not eaten, those apples are added to such a set.”

(b) NEG [ADD $x \in X = |\{y | \text{Eat}(s/he, y)\}| > 1$ [s/he has eaten x] [x = apples]]

“It is not the case that s/he has eaten those apples as well.”

(20) 佢 可能 食埋 嗰幾個蘋果.

s/he may eat-MAAI those-few-CL-apples

(a) $\%ADD_{x \in X} = |\{y | \text{Mod}[\text{Eat}(s/he, y)]\}| > 1$ [s/he may have eaten x] [x = those apples]

Lit.: “For a set of things which s/he may have eaten, those apples are added to such a set.”

(b) Mod [ADD $x \in X = |\{y | \text{Eat}(s/he, y)\}| > 1$ [s/he has eaten x] [x = apples]]

“It is the possible that s/he has eaten those apples as well.”

(21) 佢 成日 攞埋 你啲嘢.

s/he always take-MAAI your-stuff

(a) $\%ADD_{x \in X} = |\{y | \text{Always}\langle y \rangle \text{Take}(s/he, y)\}| > 1$ [s/he always takes x] [x = your stuff]

Lit.: “S/he has always taken your stuff as well.”

(b) Always $\langle e \rangle$ [ADD $x \in X = |\{y | \text{Take}(s/he, y)\}| > 1$ [s/he takes x] [x = your stuff] in e]

“It is always the case that s/he has taken your stuff as well.”

With the negator *mou2* included in the nuclear scope and taking a smaller scope than *maai4*, (19a) asserts that s/he has not eaten those apples as well. Hence, what is presupposed is a

² The mapping of *maai4* will be discussed in more details later. At the meantime, just assume such a representation.

set of things which s/he has not eaten, with those apples added to such a set. This reading cannot be the desired reading of (19), since the set of things which s/he has not eaten constitutes a set which is too large, and potentially includes all things which s/he can eat but has not eaten. On the other hand, with *maai4* taking a narrower scope than the negator *mou2*, (19b) presupposes a set of things s/he has eaten, and the sentence denies that “those apples” is a member of the set of things which have been eaten by him/her. Hence, (19b) will give the correct interpretation for (19), that is, it presupposes a set of things which s/he has eaten, which constitutes a restricted set, but only that the object “those apples” is not a member of such a set. This demonstrates a narrower scope of *maai4* with respect to the negator *mou2*.

At first sight, the interpretation between (20a) and (20b) sounds similar, but they differ greatly in their presupposed sets. (20a) presupposes a set of things s/he may have eaten, with those apples added to such a set. Like (19a), such a presupposition is semantically odd, since (20a) presupposes the set of things s/he may have eaten in the future or in the past but unknown to the speaker, which is too large and potentially includes all things which can possibly be eaten, be it eatable or non-eatable. Hence, such a presupposition will lead to semantic deviation for (20a). On the other hand, (20b) simply presupposes a set of things s/he has eaten, with those apples possibly belonging to such a set. This is the desired reading of (20), since the epistemic modal should operate on the proposition which states that those apples belong to the set of things which s/he has eaten. The contrast between the two presupposed sets demonstrates that (20b) is a more accurate representation for (20), hence demonstrating a narrower scope of *maai4* with respect to the modals.

(21a) presupposes a set of things s/he always takes, which contains at least one member, with your stuff belonging to such a set. Such a presupposition is too strong, since (21a) presupposes there exists at least an individual’s stuff other than your stuff which is always taken by him/her. Such a reading is not the desired reading of (21), since (21) simply requires that it is always the case that your stuff is taken by him/her, and whether s/he always takes others’ stuff or not is not at issue here. On the other hand, (21b) presupposes a set of things which s/he takes and has taken, and among those things, your stuff is always added to such a set. Hence, what is included in the presupposed set is simply things possessed by others and are taken by him/her, which may include things of any individuals which have been taken once, twice, three times, etc., not necessarily always

been taken. (21b) would be the intended reading of (21), which asserts that it is always your stuff that is also taken by him/her. The contrast between (21a) and (21b) lies in the different scope relations between “always” and *maai4*: “always” takes a narrower scope than *maai4* in (21a) and is mapped to the nuclear scope of *maai4*, while “always” is outside the scope of *maai4* in (21b). Only (21b) will give the right prediction to (21), while (21a) will lead to semantic deviation, and hence, the scope of *maai4* should be smaller than that of the Q-adverb “always”.

Below are two examples with T-licensed adjuncts.

(22) 佢 好明顯 食埋 你個份.

s/he obviously eat-MAAI your-share

(a) %ADD $x \in X = |\{y | \text{Obviously}[\text{Eat}(s/he, y)]\}| > 1$ [s/he obviously has eaten x] [x = your share]

Lit: “S/he has obviously eaten your share as well.”

(b) ASSERT [obviously] [ADD $x \in X |\{y | \text{Eat}(s/he, y)\}| > 1$ [s/he has eaten x] [x = your share]]

“It is obvious that s/he has eaten your share as well.”

(23) 佢 專登 食埋 你個份.

s/he deliberately eat-MAAI your-share

(a) %ADD $x \in X = |\{y | \text{Deliberately}[\text{Eat}(s/he, y)]\}| > 1$ [s/he has deliberately eaten x] [x = your share]

Lit: “S/he has deliberately eaten your share as well.”

(b) ASSERT [deliberately] [ADD $x \in X = |\{y | \text{Eat}(s/he, y)\}| > 1$ [s/he has eaten x] [x = your share]]

“It is deliberately for him/her to have eaten your share as well.”

For (22a), *maai4* has triggered a set of things s/he has obviously eaten, and your share belongs to such a set. The presupposed set $\{y | \text{Obviously}[\text{Eat}(s/he, y)]\}$ given in (22a) is semantically odd, which requires that there exist something that s/he has obviously eaten. On the other hand, *maai4* has triggered a set of things s/he has eaten in (23b), with our share obviously being added to such a set. The presupposed set $\{y | \text{Eat}(s/he, y)\}$ is the natural set for which (22) intends. For (23a), *maai4* has triggered a set of things s/he has

deliberately eaten, with your share belonging to such a set. The presupposed set $\{y | \text{Deliberately}[\text{Eat}(s/\text{he}, y)]\}$ again is not what (23) intends for. On the other hand, the reading of (23b) is that *maai4* has triggered the set of things s/he has eaten, with your share deliberately added to such a set. The presupposed set $\{y | \text{Eat}(s/\text{he}, y)\}$ under such a case gives the intended reading for (23).

Comparing the (a)- and (b)-interpretations of (22) and (23), we can see that only (b) represents the natural interpretation of the sentence. If the assumption that *maai4* takes a wider scope than the T-licensed adjuncts were correct, we would have interpretations like (22a) and (23a), with the presupposed sets being the set of things eaten by him/her, obviously and deliberately, respectively, which are semantically odd, since a more appropriate interpretation should be the presupposition of a set of things eaten by him/her, with the T-licensed adjunct describing the way or the manner the addition of x is done.

Based on the scope interactions of *maai4* with the negator, the modal, the Q-adverb, the T-licensed adjuncts, I will conclude that both *-hoi1* and *maai4* take a vP scope or an upper VP scope.

3.2 Scope for *saai3*: vP or TP

Unlike *maai4* and *-hoi1*, *saai3* can quantify over the subject freely, when there is no verbal operator intervening between *saai3* and the subject. Putting aside the issue whether subject is base-generated at [Spec, TP] or [Spec, vP], at first sight, the difference between *saai3* and *-hoi1* and *maai4* in subject quantification seems to suggest the scope of *saai3* to be larger than those of *-hoi1* and *maai4*, with the possibility of being extended to TP if we assume subjects to be base-generated at [Spec, TP]. No matter which scope *saai3* is taking, such a scope is still restricted to the local domain, due to the structural locality constraint of verbal suffixes.

Suffixal quantifiers can quantify over traces. This is exemplified in the examples of *maai4* where *maai4* can quantify over the grammatical subject which is base-generated at a DO position. In order to reveal the contrast between *maai4* and *saai3* regarding subject quantification, relevant examples of *maai4* are repeated below.

- (24) 嗰個遲到大王 終於 嚟埋 啦.
that-CL-late-comer-king finally come-MAAI SFP

“The king of late comers as well has arrived.”

- (25) 佢 曬到 條頸 紅埋.
 s/he sun-burn-arrive CL-neck red-MAAI
 “His neck as well was sun-burnt.”

- (26) 最懶瞓嗰個 醒埋 啦.
 most-lazy-sleep-that-one wake-MAAI SFP
 “The laziest one as well has woken.”

The three sentences above involve either an adjective or an intransitive verb, and thus they share a common point that no object NPs are present in these sentences. Hence, *maai4* may associate with the subject NP, the only argument in the sentence, or the verb. The interpretations of these sentences show that *maai4* associates with the grammatical subject NP. The verbs in the three sentences above are unaccusative, with the subject NP base-generated at the object NP position. Hence, it is possible that *maai4* in fact associates with the trace left by the grammatical subject at the base-generated DO position. Such a prediction is in fact borne out in the following examples, which are repeated below.

- (27) (a) ??你 跳埋 呀.
 you jump-MAAI SFP
 (b) (不如) 你 跳埋 一份.
 (why-not) you jump-MAAI one-part
 “Why don’t you take a part as well and jump?”
 (c) 你 跳埋落去 呀.
 you jump-MAAI-down SFP
 “You jumped down as well.”
- (28) (a) *佢 跑埋.
 you run-MAAI
 (b) 佢 跑埋 一份.
 s/he run-MAAI one-part
 “Why don’t s/he take a part as well and race?”

The verbs above are unergative, with the subject NPs being agentive, and hence, base-

generated at the subject NP position, instead of rising from object position in deep structure to the subject position at SS. The contrast between the two sets of sentences above demonstrates that it is the DO, be it moved or base-generated, that is associated with *maai4* in these cases. Hence, these sentences demonstrate the possibility of suffixal quantifiers to quantify over traces, which is what has already been suggested in (5) above.

The contrast in grammaticality between the above two sets of sentences will not occur in the case of *saai3*, since *saai3* can quantify over both the subjects and the DO (be it base-generated or a trace). As I have mentioned earlier, the possibility of *saai3* to quantify over the subject may lead to a prediction that the scope *saai3* is larger than the vP scope of *-hoi1* and *maai4*, namely the possibility of *saai3* to take a TP or sentential scope. On the other hand, the failure of *saai3* to quantify over the base-generated topic, a TP-adjunction, suggests such a scope cannot be wider than TP. However, the question now is can we extend the scope of *saai3* to TP simply based on its possibility to quantify over subjects. The above discussion and (5) suggest that suffixal quantifiers can quantify over traces, and hence, there is nothing hindering *saai3* from quantifying over the trace left by the subject in [Spec, vP], since subjects are considered to be base-generated at [Spec, vP] and later moved to the [Spec, TP] position, under the vP-internal Subject Hypothesis. Under such a case, we can still say that like other suffixal quantifiers, *saai3* also takes a vP-scope, and the case of *saai3* quantifying over subjects is in fact quantification over traces left behind at [Spec, vP]. Hence, in order to confirm the scope of *saai3*, we need to consider its interaction with other logical operators. Consider the example below first.

(29) 佢 冇 食晒 嗰幾個蘋果.

s/he not-have eat-SAAI those-few-CL-apples

(a) SAAIx [$x \in$ [[those apples]]] [S/he has not eaten x]³

“For those apples, s/he has not eaten them all.”

(b) NEG [SAAIx [$x \in$ [[those apples]]] [s/he has eaten x]]

“It is not the case that for those apples, s/he has eaten them all.”

(29a) asserts that s/he has not eaten all those apples, with the negator focusing on the

³ Again, the mapping of *saai3* will be discussed later in this chapter. At the meantime, just assume such a representation.

quantity of apples that has been eaten by him/her. Hence, (29a) gives an inference that s/he has eaten some of those apples, but not all. This means that (29a) allows the reading of the total consumption of the set of apples jointly performed by him/her and someone else, or there are in fact still some apples remaining. For the negator taking a wider scope than *saai3*, we have (29b). The interpretation of (29b) suggests that it is not the case that s/he has eaten all those apples. Hence, the negator is simply negating the proposition “s/he has eaten all those apples”, and there is a strong inference that not a single apple remains.

In fact, both interpretations in (29a) and (29b) are possible for (29). Hence, the sentence leads us to claim that *saai3* takes the same scope with *mou2*. Therefore, it is reasonable to claim that *saai3* takes a scope slightly wider than *-hoi1* and *maai4*, which is likely to be wider than vP but still confined within TP. Hence, this explains why *mou2* and *saai3* can scope over each other, giving two possible interpretations in (29a) and (29b). In order to verify such a claim, we need to examine more examples below.

(30) 佢 成日 攞晒 你啲嘢

s/he always take-SAAI your-stuff

(a) SAAIx [x ∈ [your stuff]] [s/he always take x]

“For your stuff, it is always the case that s/he takes them all.”

(b) Always<e> [C(s/he) in e] [SAAIx [x ∈ [your stuff]] [s/he takes x] in e]

“It is always the case that s/he takes all your stuff.”

(31) 佢 可能 食晒 嗰幾個蘋果.

s/he may eat-SAAI those-few-apples

(a) Mod [SAAIx [x ∈ [those few apples]] [s/he has eaten x]]

“It is possible that s/he has eaten all the apples.”

(b) ???SAAIx [x ∈ [those apples]] [s/he may have eaten x]

“For those apples, s/he may have eaten them all.”

In (30a), the quantification by “always” operates within the nuclear scope determined by *saai3*, and hence, we have *saai3* taking a wider scope with respect to the Q-adverb “always”. On the other hand, we have “always” taking a wider scope over *saai3* in (30b). (30a) states that for a set of your stuff, s/he always takes all of them. On the other hand, (30b) means that the event of him/her taking all your stuff always occurs, and the restrictor

includes those contextually relevant events. Both readings are in fact possible for (30). (30a) concerns only your stuff, and it allows the possibility that s/he has only taken your stuff two or three times, since what is required is a proportional reading, that is, as long as it is the case that whenever s/he sees your stuff, be it two or three times, s/he will take it away. On the other hand, (30b) gives a reading that it is always the case that s/he takes all your stuff. The reading given in (30b) is that in some contextually determined situations which involve him/her, it is always the case that s/he has taken all your stuff. This is also a possible reading for (30). Therefore, (30) reveals that *saai3* takes the same scope as that of “always”, and hence, the two can scope over each other.

Now, consider the examples with modals. Comparing (31a) and (31b), we can see that a more natural reading will be (31a). (31a) gives a reading of “it is possible that s/he has eaten all the apples”, and (31b) “s/he may have eaten all the apples”. This shows that the scope of *saai3* is slightly lower than that of the modal which takes a TP-scope.

The above suggests that *saai3* is likely to take a scope between TP and vP. The proposed scope for *saai3* will be more obvious when we consider its interaction with T-licensed adjuncts. Relevant examples are given below.

(32) 佢 好明顯 已經 炒晒 嗰幾個人.

s/he obviously already sack-SAAI those-few-person

(a) ASSERT [obviously] [SAAI [x = those employees] [s/he has sacked x]]

“It is obvious that s/he has sacked all those employees.”

(b) ???SAAI [x = those employees] [s/he obviously has sacked x]

“For those employees, s/he obviously has sacked them all.”

(33) 佢 專登 炒晒 嗰幾個人.

s/he deliberately sack-SAAI those-few-CL-person

(a) ASSERT [deliberately] [SAAI [x = those employees] [s/he has scaked x]]

“It is deliberately that s/he has sacked all those employees.”

(b) ???SAAI [x = those employees] [s/he has deliberately sacked x]

“For those employees, s/he deliberately has sacked them all.”

Like the case of modals, *saai3* gives a more natural interpretation in (a), i.e. with *saai3* interpreted within the scope of the T-licensed adjunct. In (32a) and (33a), we have *saai3*

interpreted within the T-licensed adjunct, and the readings become “it is obvious that s/he has sacked all those employees” and “it is deliberately that s/he has sacked all those employees”, respectively. On the other hand, (32b) means that for those employees, s/he has obviously sacked them all, while (33b) means that concerning those employees, s/he has deliberately sacked them all. Both readings have *saai3* interpreted outside the scope of the T-licensed adjunct, which give relatively unnatural readings for the relevant sentences. Since (32a) and (33a) give the desired readings for (32) and (33), they further support the claim that *saai3* takes a scope between vP and TP.

Based on the discussion so far, I would like to posit the scope interpretation of verbal suffixes as follows:

(34) Scope Interpretation of Suffixal Quantifiers

Suffixal quantifiers generally take a vP (upper VP) scope in their local domains. Some suffixal quantifiers may take a scope slightly wider than vP but such a scope is still confined within TP.

The above suggests that while *-hoi1* and *maai4* take a strictly vP scope, the scope of *saai3* can be slightly wider than vP but it is still confined within TP.

3.3 The Relative Positions of Different Operators and Verbal Suffixes

In order to explain the blocking effect of subject quantification by the negator *m4* and the postverbal *dak1*, we need to consider the relative scope orders among logical operators, which is proposed as follows.

(35) epistemic modals / *saai3* > *mou2* (Mandarin *mei*) > *m4* (Mandarin *bu*) > deontic/dynamic modals > postverbal *dak1* (*-hoi1*, *maai4*)

Adopting an Isomorphic Principle for the above operators (cf. Huang 1982, T. Lee 1985, etc.), we can say that the scope order of Chinese quantifiers can be gleaned from their linear orders at SS. The relative scope orders of these logical operators can be illustrated by the following sentences.

- (36) (a) 我 可能 攞得晒 啲嘢. (epistemic modal > postverbal *dak1*)
 I may carry-DAK-SAAI those-things
 “I may be able to carry all those things.”
- (b) 你 應該 食得晒 啲嘢. (deontic modal > postverbal *dak1*)
 you should eat-DAK-SAAI those-things
 “You should be able to eat all those food.”
- (c) 我 可能應該 去 探一探 佢. (epistemic modal > deontic modal)
 I may should go visit-Asp-visit him/her
 “It may be that I should go and visit him/her.”
- (d) 你 唔可以 隨地 吐痰. (*m4* > denotic modal)
 you not-can anywhere spilt
 “You cannot spit at anywhere you like.”
- (e) 我 可能 唔 可以 教得晒 成個 syllabus.
 I may not can teach-DAK-SAAI whole-CL-syllabus
 “It may be the case that I am not able to teach all the things included in the syllabus.”

The sentences (a) through (d) in (36) demonstrate a relative scope orders of epistemic modal > *m4* > deontic modal > postverbal *dak1*. This is more obvious in (36e) where we have all logical operators including the epistemic modal 可能 ‘may’, the negator 唔 ‘not’, the deontic modal 可以 ‘can’ and the postverbal *dak1* ‘can’ co-occurring in the same sentence, confirming the scope interactions among the operators. The scope of *dak1* should be similar to that of *-hoi1* and *maai4*, which is a vP scope.

So far, we have not included the negator *mou2* in the above scope order, due to the realis and irrealis crash among *mou2* ‘not-have’, the modals and *m4* ‘not’. Concerning the scope order between *mou2* and *m4*, I assume that it is no different from that of the Mandarin *mei* ‘not-have’ and *bu* ‘not’. According to Lee (2002), *mei* takes scope over the top VP (vP) or the maximal VP, while *bu* takes scope over the lower VP or the first immediate node that it c-commands. This suggests that *mou2* should occupy a higher position than *m4*, which is supported by the following examples.

(37) (a) 你 冇 勤力 讀書.

You not-have hard study

“You have not studied hard.”

(b) 你 唔 勤力 讀書.

You not hard study

“You study not hard.”

The negator *mou2* in (37a) negates the entire VP 勤力讀書 ‘hard study’. Contrasted with (37a), *m4* only negates the adverbial phrase 勤力 ‘hard’ in (37b), thus demonstrating a wider scope of *mou2* with respect to *m4*. Moreover, since *saai3* takes scope over *mou2*, cf. (29), *saai3* should occupy a higher position than *mou2* in their scope order, and share the same scope with epistemic modal, since the two can scope over each other, cf. (31).

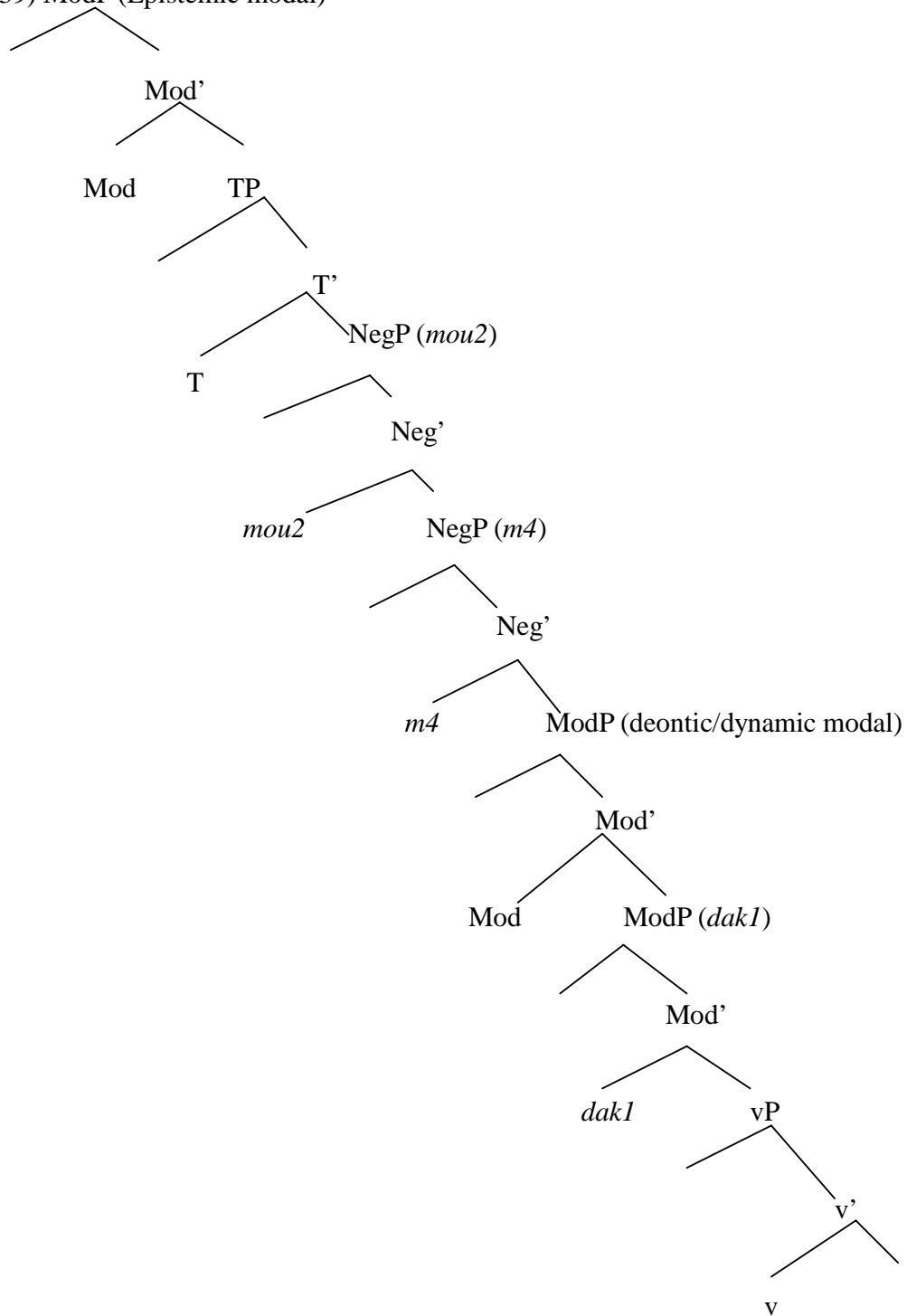
Based on the above discussion, we can arrive at the following scope relations among the logical operators mentioned above.

(38) Scope Orders among Modals and Negators

Epistemic modals / *saai3* > *mou2* (Mandarin *mei*) > *m4* (Mandarin *bu*) > deontic/dynamic modals > postverbal *dak1* / *-hoi1* / *maai4*

The logical operators under investigation are negators and modals, with the former including *mou2* and *m4*, and the latter epistemic, deontic and dynamic modals and Cantonese postverbal modal *dak1*. Extending such a principle to all logical operators, we can say that the relative scope orders proposed in (38) will have the syntactic relations represented in (39) below.

(39) ModP (Epistemic modal)



The above representation has all the logical operators taken as heads, which is for the sake of a clearer representation. What concerns us here is the scope order among the operators, and I will not go into the issue whether they will project heads or not. Two questions will be raised concerning the above syntactic representations. The first is the position of the epistemic modal which is suggested to occupy a higher position than TP. The second

question is the position of the deontic modal which is suggested to occupy a higher position than vP. This is in fact what is claimed in Lin & Tang (1993). They claim that Chinese modals, whether interpreted as epistemic or deontic, should head a VP projection and are primary predicates of the clause. In other words, modals are independent predicates subcategorized for a proposition. Lin & Tang propose that the structure of sentences with modals is like (40), with relevant examples given in (41a) and (41b).

(40) [CP ... [IP NEG [VP Modal [CP ... [IP ...]]]]

(41) (a) *Ni zheyang zuo (bu)yinggai.*

You this-way-do not should

“You did things in this way, not right.”

(b) *Keneng ta yijing chi-guo-fan le.*

may-be s/he already eat-GWO-rice Perf

“Maybe, s/he has already had his/her meal.”

Based on the above syntactic scope relations below, we can explain the blocking effect of subject quantification in the case of *saai3*.

3.4 Explaining the Blocking Effect of Subject Quantification

As I have already mentioned, verbal operators are potential blockers for subject quantification. Relevant sentences are repeated below.

(42) 佢哋 攞晒 本書.

they take-SAAI CL-book

“All of them have taken the book.”

(43) (a) *佢哋 唔攞晒 本書.

they not-take-SAAI CL-book

(b) *佢哋 攞得晒 本書.

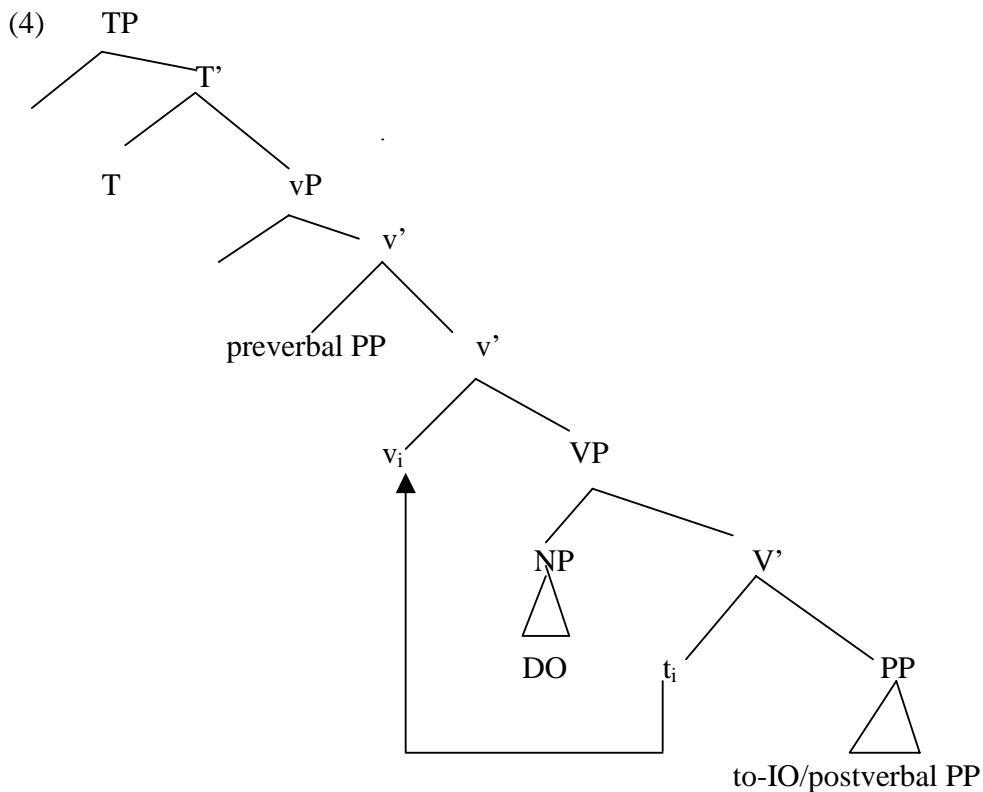
they take-DAK-SAAI CL-book

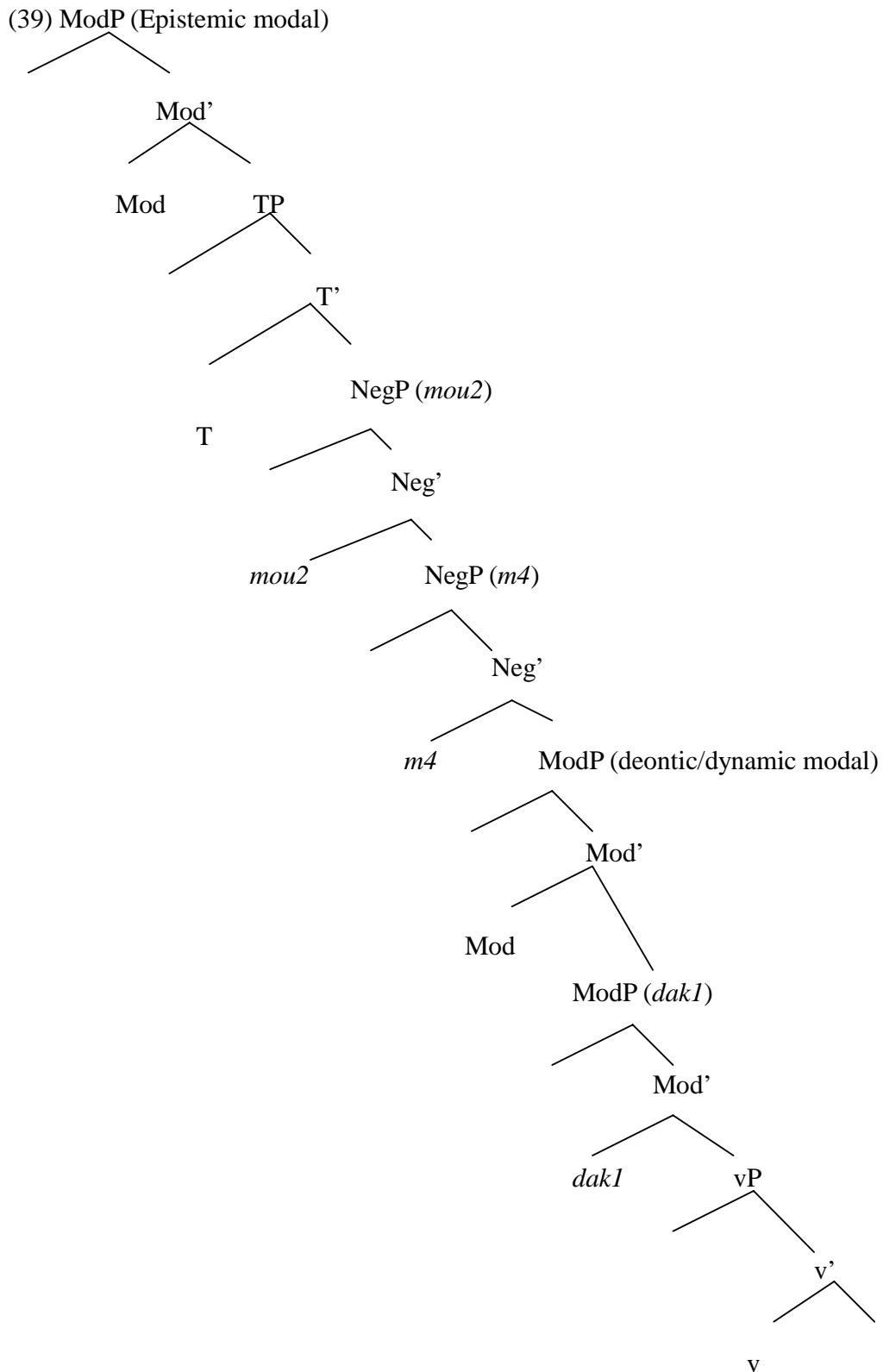
(c) *佢哋 攞唔晒 本書.

they take-not-SAAI CL-book

As explained in the previous literature, (43a) demonstrates the failure of *saai3* to quantify over the subject due to the blockage by the negator, thus resulting in the ill-formedness of (43a). Similarly, the postverbal particle *dak1* ‘can’ forms the potential construction 攞得晒 ‘take-DAK-SAAI (take-can-all)’ in Cantonese in (43b), and its presence again blocks the quantification of *saai3* over the subject, making (43b) ill-formed. A blocking effect is also found in the postverbal negator 攞唔晒 ‘take-not-SAAI (take-not-all)’ in (43c). Contrasting (42) with (43), we can see that when these blockers are removed from (42), *saai3* can quantify over the subject NP. Hence, operators like *m4* and postverbal modal *dak1* create a blocking effect for subject quantification.

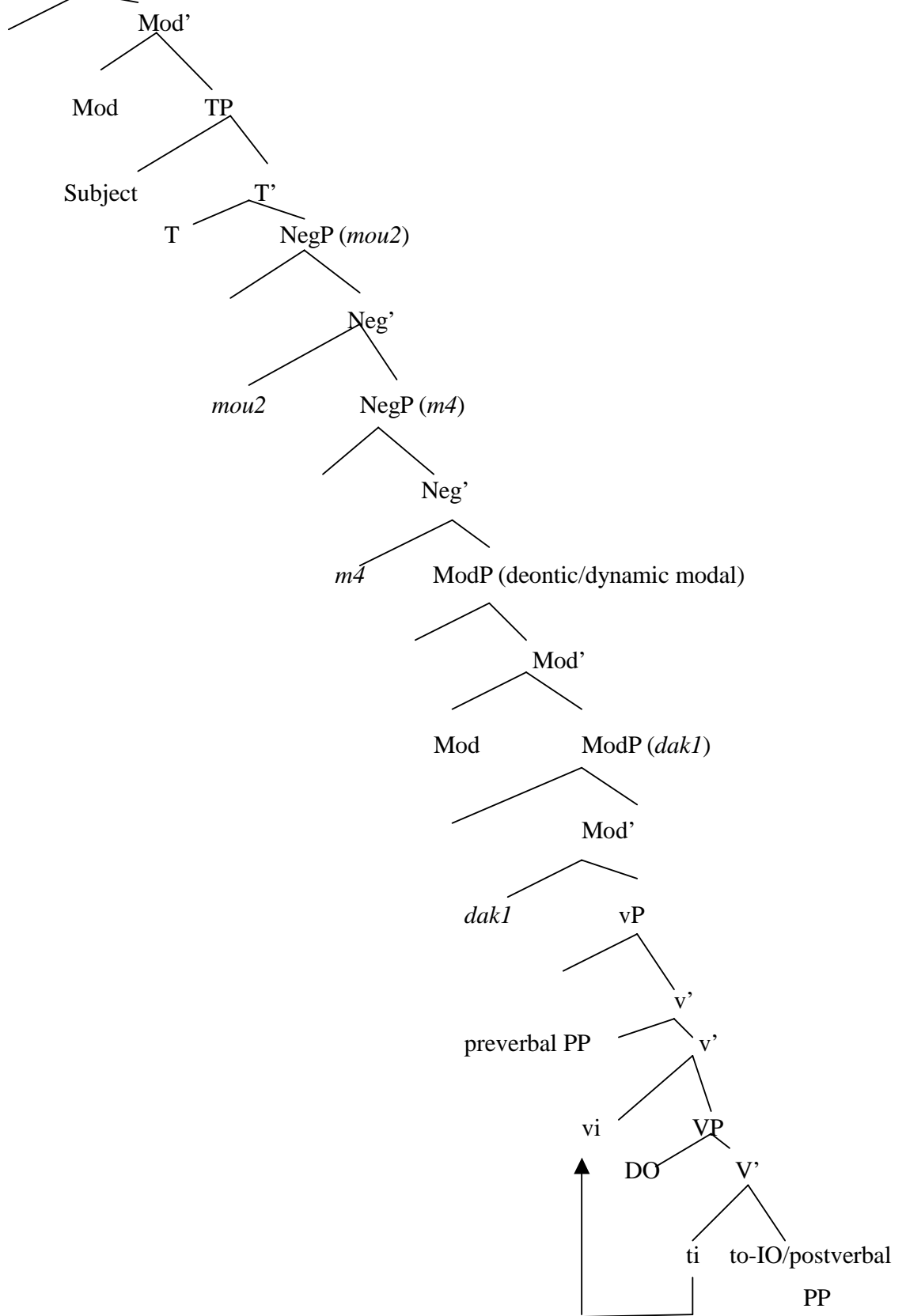
With the scope relations in (38) and (39), the blocking effect by the negator and the postverbal modal can be explained by a scope interaction between the suffixal quantifier and the negator and the postverbal modal. I will consider the case of the negator and the suffix first. The *saai3*-sentence in (43a) will be well-formed only when *saai3* can quantify over the subject. In order to see the scope relation among the preverbal/postverbal PPs, verbal arguments and other logical operators, we need to incorporate (4) into (39).





After incorporating (4) into (39), we have (44) below.

(44) ModP (Epistemic modal)



The VP-shell is incorporated into (44), with *dak1* taking a vP scope, on a par with that of –*hoi1* and *maai4*, and the preverbal PP remains a v-licensed adjunct, positioned at [Spec, vP]. The Isomorphic Principle states that the scopal order among Chinese logical operators and quantifiers is directly mapped from SS to LF. The scope order between the preverbal PP and *dak1* demonstrates that *dak1* can have scope over the preverbal PP. In fact, another possibility for *dak1* is to be interpreted within the preverbal PP. Relevant examples are given below.

(45) (a) 你 同得我 去開會, 就 代表 有職升 啦.

You with-DAK-me go-meeting then represent have-promotion SFP

“You can go to the meeting with me, which says that you have chances to be promoted.”

(b) 我 同佢 講得 兩句 㗎.

I with-him/her talk-DAK two-sentences SFP

“With him/her, I can have a little talk.”

Hence, we can consider *dak1* as taking either a vP or VP scope. Therefore, *dak1* can be positioned either between vP and VP or above vP. However, no matter which scope it takes, *dak1* is still a verbal operator, and the difference lies in whether it operates on the upper or the lower VP. However, in the following discussion, I will assume *dak1* takes a vP scope.

Consider the blocking effect of subject quantification by the verbal operators, like negator and *dak1*. Assuming *saai3* takes a scope slightly higher than vP and the negator *m4* a vP scope (cf. (39)), since *saai3* is base-generated in a suffixal position to the verb, the negator *m4* will not create any blockage of quantification when *saai3* is quantifying over verbal arguments within the scope of the negator. Hence, we can predict that the negator *m4* will not create any blockage of the quantification of *saai3* over the IO/the postverbal PP, the DO or the preverbal PP, which is exemplified by the following sentences.

(46) (a) 佢 唔食晒 啲嘢 佢.

s/he not-eat-SAAI those-stuff SFP

“S/he will not eat all those stuff.”

- (b) 佢 不𢞐 唔擺晒書 喺張枱度.
 s/he always not-put-SAAI-books on-CL-table
 “S/he is used to not putting books all over the table.”
- (c) 我 唔 同佢哋 擺晒書 啦!
 I not with-them take-SAAI-books SFP
 “I will not take books for all of them.”
- (d) 佢哋 返晒學.
 They back-SAAI-school
 “All of them are back to school.”

Saai3 has no problem quantifying over the DO 啲嘢 ‘those stuff’ in (46a), the postverbal PP 喺張枱度 ‘on the table’ in (46b), and the preverbal PP 同佢哋 ‘with them’ in (46c), and according to the scope relation shown in (39), they are within the scope of the negator *m4*. This shows that when *saai3* is quantifying over constituents within *m4*, no blockage will occur. Hence, the blockage of subject quantification must be due to a scope crash between *saai3* and *m4* when *saai3* is required to be raised to quantify over the subject. When the negator *m4* takes a vP scope and *saai3* has to be raised to a TP or a position higher than vP to quantify over the subject, *saai3* is somehow trapped within the vP scope of *m4*. This causes a crash between the scope of subject and the scope of *saai3* which is confined within the scope of the negator. This also explains why the absence of *m4* will not create any problem for subject quantification, as in (46d).

A similar scope crash occurs in the case of *dak1* with *saai3*. Similarly, assuming the scope of *dak1* is vP, the structural relation in (44) predicts that quantification over DO and IO will never be blocked by *dak1*, since DO and IO are always within the scope of *dak1*. This is exemplified in (47a) and (47b) below.

- (47) (a) 我 食得晒 啲嘢.
 I eat-DAK-SAAI those-stuff
 “I can finish all those stuff.”
- (b) 我 送得晒嘢 比佢哋.
 I give-DAK-SAAI-things to-them
 “I can give stuff to all of them.”

When *saai3* quantifies over the DO and the IO in (47a) and (47b) which are both within the scope of *dak1*, the relevant quantifications are not blocked. On the contrary, since the preverbal PP adjoins to *v'*, in the case where *dak1* takes a lower VP scope, the presence of the postverbal *dak1* but not the negator *m4* will block the quantification of the suffixal over the preverbal PP. This gains support in the following sentences.

(48) 我唔同佢哋 影晒相.

I not with-them take-SAAI-photo

“I will not take photos with all of them.”

(49) (a) *我同佢哋 影得晒相.

I with-them take-DAK-SAAI-photos

(b) *我哋 攞得晒 本書.

They take-DAK-SAAI CL-book

Without *dak1* or the negator *m4*, *saai3* is predicted to quantify over the preverbal PP in (48) and (49), and the subject in (49b), according to the general hierarchy. (48) is well-formed since *saai3* is able to quantify over the preverbal PP, and the negator creates no blocking effect to such a quantification. On the other hand, (49a) is ill-formed, since the quantification of *saai3* over the preverbal PP is blocked by the presence of *dak1*. (49a) will be well-formed when *dak1* is deleted. On the other hand, the blocking effect by *dak1* also occurs when we have *saai3* quantifying over subjects, as in (49b). The above leads us to conclude that all verbal arguments and adjuncts, as long as they are positioned higher than *dak1*, will be blocked from the relevant quantification.

Like the case of the negator, we can explain the blocking effect by appealing to a scope crash. *Saai3* has to rise to a position higher than that of *dak1* to quantify over the preverbal PP and the subject. The blockage of subject and preverbal PP quantification is due to the following reason: when *dak1* is present, *saai3*, as a verbal suffix, is “trapped” within the scope of *dak1*, be it *vP* or *VP*. This causes a crash between a *v'* scope of preverbal PPs and the *VP* scope of *saai3* which it is forced to stay, when *dak1* takes a *VP* scope, or a crash between the scope of subjects and the scope of *saai3* where it is forced to stay, when *dak1* takes a *vP* scope.

3.5 Suffixal Quantification via Verb Movement

Being suffixal in nature, the suffixal quantifier is attached to the verb. I will argue below that the verbal suffix performs quantification via verb movement. Such a claim is supported by three pieces of evidence.

Firstly, if we assume that suffixal quantification is performed via verb movement, we can explain why suffixal quantification is sensitive to verbal arguments. The relevant syntactic operations are in fact motivated by the morphological operation of the suffix on the verb.

Secondly, Travis (1984) suggests a head movement constraint (HMC) which states that a head can only move from the head position in one phrase to the head position in the immediately containing (i.e. next-highest) phrase in the structure. Considering the quantification by verbal suffixes, suffixal quantification is constrained within the local domain, the TP or vP, as shown above. The relevant suffixal quantification is performed cyclicly, with the suffix being moved from a head position to the head position in the next-higher phrase v, and finally to T for the subject. Assuming the suffix occupying a head position, V of VP (by suffixating to the verb), since V to v movement and v to T movement are local operations, from the locality property of suffixal quantification, we can see that suffixes perform quantification via head-movement. Moreover, based on such a head-movement account, we can speculate that non-head constituents will not block subject quantification by the suffixal quantifier, since moved heads can move across an intervening nonhead constituent. This prediction is in fact borne out in the relevant data.

(50) 佢哋 拿拿林 攞晒 本書.

They quickly take-SAAI CL-book

“All of them have quickly taken the book.”

拿拿林 ‘quickly’ is a v’-adjunct, and hence is a non-head constituent. The well-formedness of (50) demonstrates that such a non-head constituent does not block the quantification of *saai3* over the subject which is the only possible verbal argument for *saai3* in the sentence.

Based on the above, I would try to capture suffixal quantification by the following syntactic mechanism.

(51) Syntactic Mechanism in Affixal Quantifiers

The suffixal quantifier Q carries its [+Q] features and quantifies over verbal arguments and adjuncts according to the syntactic hierarchy via verb movement.

4. The Syntax-Semantics Mapping in Suffixal quantifiers

A very important question in the mapping of these suffixes is whether they follow Diesing's (1992) Mapping Hypothesis which suggests materials within vP map to the nuclear scope and those from TP to the restrictor. The same mapping mechanism has been adopted for the Q-adverbs and other TP-/vP-operators. The question now is what role does the syntactic hierarchy play in such a mapping? According to Diesing or Tsai (1994, 2001), they both assume that either vP or syntactic predicate maps to the nuclear scope and TP (excluding the vP) or syntactic subject then maps to the restrictor. In this section, I will argue that suffixal quantification triggers a semantic partition different from Diesing's and Tsai's proposals. My proposal is that suffixal quantification is constrained by a grammatical function hierarchy, which determines its syntax-semantics mapping. The constituent selected from such a hierarchy is mapped to the restrictor or the nuclear scope (depending on individual suffixal quantifiers) and everything else to the restrictor or the nuclear scope, correspondingly.

Considering verbal suffixes as quantifiers, we can see that they will trigger the following tripartite structure.

(52) Representation of Suffixal Quantifiers

The verbal suffix Q is a quantifier which applies to two arguments, giving the representation: Suffix (A) (B)

The discussion in Chapter 4 has already shown that suffixal quantifiers quantify over constituents determined by the general hierarchy. Now the question is should such a quantified constituent be mapped to the restrictor (A) or the nuclear scope (B)? The following are the two possible representations:

(53) Two Possible Quantificational Structures for Suffixal Quantifiers(a) Qx [Argx] [vP (including Arg)](b) Qx [vP (including Arg)] [Argx]

Arg. is selected according to the general hierarchy of argument association.

The two interpretations differ in whether the selected verbal argument of the suffix is mapped to the restrictor or to the nuclear scope.

4.1 The Syntax-semantics Mapping in Universal Quantifier *Saai3*

I will start my discussion from the unselective binder *saai3*.

(54) 佢哋 食晒橙.

They eat-SAAI-oranges

(a) SAAIx [$x \in$ [[they]]] [eat-oranges(x)]

“As for them, they have all eaten oranges.”

(b) %SAAIx [Eat-oranges(x)] [$x =$ they]

Lit.: “For all x’s who have eaten oranges, x is them.”

(54a) is the meaning represented by the possibility in (53a), and the reading is for the selected argument, they all have performed the event “eating-oranges”. The selected argument is mapped to the restrictor. In other words, the suffix quantifies over the set of individuals denoted by the restrictor and each member of the set has the property P denoted by the nuclear scope or is relevant to the event/situation described by the nuclear scope. Assume the following scenario. In a café with at least 20 persons, table A has four persons. Sitting at table B, my friend points at table A and utters (54). In order to make (54) true, what is required is all individuals sitting at table A performed the action of eating oranges, and whether there are other people in that café also eating oranges is not our concern. This is what is conveyed in (54a). On the other hand, if (54) is interpreted as (54b), since the subject is mapped to the nuclear scope. What constitutes the restrictor is the set of individuals in the café who has performed the event “eating-oranges”, and (54) will be true under the condition that only individuals sitting at table A are eating oranges. Hence, it does not allow individuals sitting at other tables to perform the event “eating-oranges”. This

interpretation is too strong, since the sentence will be true also, as long as all the individuals at table A performed the relevant “eating-oranges” action, and it also allows such an event to occur at other tables.

In other words, in the case of *saai3*, the function of the selected argument is to set up a domain for suffixal quantification so that the event or thing denoted by the remaining parts of the sentence is related to all parts in the set denoted by the argument.

Based on this, I would like to propose that the semantic partition of *saai3* should be as follows:

(55) A Mapping Hypothesis for the Universal Suffixal Quantifier *saai3*

SAAIx [Argx] [vP (including Arg)]

OP RESTRICTOR NUCLEUS

where x is the constituent selected according to the syntactic hierarchy.

In order to verify the mapping of *saai3* posited above, we can apply it to another sentence below.

(56) 我 呢個月 會 寫晒 嗰幾份 papers.

I this-CL-month will write-SAAI those-few-papers

(a) $\exists t \subset I [t' \in t] \text{ SAAIx } [x \in [\text{those papers}]] [I \text{ will finish writing } x \text{ at } t']$

(b) “Within this month, as for those papers, I will finish them.”

(c) $\% \exists t \subset I [t' \in t] \text{ SAAIx } [x \in [\text{things I will finish at } t']] [x = \text{those papers}]$

(d) Lit.: “Within this month, for all the things I will finish, they are those papers.”

According to the hierarchy, *saai3* will associate with the DO which is [+specific] and [+plural] in (56). Again, (56a) represents the correct meaning of (56). The reading states that for the things denoted by the DO, I will finish writing them”, as in (56b). Hence, what the sentence concerns is whether the subject has finished writing the set of things restricted by the DO or not. It allows the case that the subject will finish writing other things beside those papers. However, the interpretation in (56c) does not allow the case that the subject has finished writing other things beside those papers within this month, since the representation will give (56) the meaning that “for all the things which the subject will

finish writing during this month, they all have to be those papers”, cf. (56d). As I will discuss in Chapter 6, such a mapping will be possible only when the DO is in focus. Hence, only (56a) not (56c) gives the correct mapping for *saai3*.

This confirms that in the case of *saai3*, the function of the selected argument is to set up a domain for suffixal quantification, such that the event or thing denoted by the remaining parts of the sentence is related to all parts in the set denoted by the argument.

4.2 Formalisations in *Saai3*

Based on the proposed mapping for *saai3*, I will now give its semantic representations. Under the current account, the semantics of *saai3* is represented as follows.

(57) The Basic Semantics of *saai3*:

(a) (i) Semantic representation:

$$\lambda P \lambda y \forall x [x \in [\text{DO}]] \rightarrow P(x)(y)$$

(ii) Quantificational structure derived from (i):

$$\text{SAAIx} [\text{DO}(x)] [\text{vP (including DO)}]$$

(b) (i) Semantic representation:

$$\lambda P \forall x [x \in [\text{Subject}]] \rightarrow P(x)$$

(ii) Quantificational structure derived from (i):

$$\text{SAAIx} [\text{Subject}(x)] [\text{vP (including Subject)}]$$

(c) (i) Semantic representation:

$$\lambda P \lambda y \lambda z \forall x [x \in [\text{dative argument/NP in preverbal PPs}]] \rightarrow P(x)(y)(z)$$

(ii) Quantificational structure derived from (i):

$$\text{SAAIx} [\text{Preverbal PP}(x)/\text{Dative argument}(x)] [\text{vP (including Preverbal PP/Dative argument)}]$$

(d) (i) Semantic representation:

$$\lambda P \forall x [\text{Subject}(x) \rightarrow P(x)] \text{ where } P \text{ is the property denoted by the adjectival predicate}$$

(ii) Quantificational structure derived from (i):

$$\text{SAAIx} [\text{Subject}(x)] [\text{vP (including subject)}]$$

(e) (i) Semantic representations:

(1) $\lambda P \lambda y \forall x [\text{Degree}(x) \rightarrow [P(y) \ \& \ \text{Degree}(P, x)]]$ where P is the property denoted by the adjectival predicate

(2) $\lambda P \lambda y \forall x [\text{Boundary}(x) \rightarrow [P(y) \ \& \ \text{Area}(P, x)]]$ where P is the property denoted by the adjectival predicate

(3) $\lambda P \forall x [\text{Extent}(x) \rightarrow \exists e [P(e) \ \& \ \text{Extent}(x, e) \ \& \ \text{Roles}(e)]]$

(ii) Quantificational structure derived from (i):

SAAIx [Degree(x)/Boundary(x)/Extent(x)] [$\forall P$ (including Degree/Boundary/Extent)]

The above demonstrates a nice mapping from the syntactic representation to the semantic one. The semantic representations above can be generalized into one representation as follows:

(58) Generalised Representations for Universal Suffixal Quantifier *saai3*

For any predicate P, its selected argument y or degree q,

Semantic representations:

(i) $\lambda P \exists y \forall x [x \in y \rightarrow P(x)]$

(ii) $\lambda P \exists Q \forall q [q \in Q \rightarrow P(q)]$

Quantificational structure derived from the relevant semantic representations:

(a) SAAIx [$x \in y$] [P(x)]

(b) SAAIq [$q \in Q$] [P(q)]

Generalising from the above mappings, we can see that the restrictive clauses in the semantic representations in (i) and (ii) are mapped to the restrictors in the quantificational structures in (a) and (b), with the consequent clauses in (i) and (ii) mapped to the nuclear scopes in (a) and (b). In order to see how the mapping of *saai3* works, relevant examples are repeated below as an illustration.

(59) 我 散晒 啱啱買嗰啲書 喺張枱度.

I scatter-SAAI just-bought-those-books on-CL-table

“I have scattered all the books I have just bought over the table.”

SAAIx [$x \in$ [[Books just bought]]] [Scatter(I, x) & On(the-table)]

- (60) 我 攞晒 嗰幾個袋 比佢哋。
 I take-SAAI those-few-CL-bags for-them
 “I have taken all those bags for them.”
 SAAIx [x∈[|those bags|]] [Take(I, x) & To(them)]
- (61) 佢哋 去晒 西藏。
 they go-SAAI Tibet
 “All of them have gone to Tibet.”
 SAAIx [x∈[|they|]] [Go(x, Tibet)]

If there is a DO argument in the *saai3*-sentence, according to the general hierarchy, it will be such an argument that is associated with *saai3*. The selected argument will be mapped to the restrictor, and all parts in such a restrictive set are related to the event denoted in the nuclear scope. Therefore, (59) will be true as long as for all the books I have just brought, they are scattered on the table. Similarly, (60) and (61) will be true, if all the bags in the restricted set are taken for them, and if all of them have gone to Tibet, respectively. Hence, *saai3* only concerns with the members in the restrictive set, as long as all parts in that set satisfy the property denoted in the nuclear scope, the relevant sentence will be true.

On the other hand, when we have a bare noun DO or a VO compound, *saai3* will select the [+plural] and [+definite] argument according to the general hierarchy, which is dative arguments > preverbal PPs > subjects. Some examples are repeated below for illustration.

- (62) 我哋 食晒飯 啦。
 they eat-SAAI-rice SFP
 “All of us have had lunch.”
 SAAIx [x∈[|We|]] [Have-meal(x)]
- (63) 佢哋 返晒學 啦。
 they back-SAAI-school SFP
 “All of them have been back to school.”
 SAAIx [x∈[|they|]] [Back-to-school(x)]
- (64) 我哋 喺嗰幾個地方 送晒書 俾佢哋。
 they at-those-few-CL-places give-SAAI-books to-them

“We have given books to all of them in those places.”

SAAIx [x∈[[them]]] [Give-books(We) & To(x) & At(those places)]

(65) (a) 我哋幾個 同佢 反晒面.

we-several with-him/her in-SAAI-bad-terms

“All of us are in bad terms with him/her.”

SAAIx [x∈[[we]]] [In-bad-terms(x) & With(him)]

(b) 我 同佢哋幾個 反晒面.

I with-them-several in-SAAI-bad-terms

“I am in bad terms with all of them.”

SAAIx [With(x) & x∈[[them]]] [In-bad-terms(I) & With(x)]

All the examples above have a bare noun as DO or a VO, and the selected argument is determined according to the general hierarchy. Subjects, which are the only plural and definite arguments in (62) and (63), are mapped to the restrictor, with all members in the restrictor involved in the events denoted by the nuclear scope. In (64), according to the hierarchy, the dative argument is selected. The dative argument “them” is mapped to the restrictor, and all members in the restrictor are involved in the relevant event denoted by the nuclear scope. Finally, the subject is selected in (65a), while the preverbal PP is selected in (65b). They are both mapped to the restrictor, with all members in the restrictor having the properties denoted by the nuclear scopes.

In the case of adjectival predicates and statives, it is usually the case that they do not take a DO. Relevant examples are repeated below to show how the semantics works here.

(66) 佢哋 盲晒.

they blind-SAAI

“All of them are blind.”

SAAIx [x∈[[they]]] [Blind(x)]

Since adjectival predicates generally do not have a DO argument or dative argument, the quantified constituent will be either the subject or the preverbal PP. In (66), what is selected is the plural and definite subject, which is mapped to the restrictor. All individuals in the restrictor have the property of being blind.

However, when both the subject and the NP in the preverbal PP are singular, we are then forced to go to the representation in (57e) where we have *saai3* quantifying over the degree/extent/boundary denoted by the adjectival predicate and the stative. Relevant examples are given below.

(67) 佢 打晒冷顫.

s/he shiver-SAAI

“S/he shivered totally.”

SAAIq [q∈Degree of shivering] [Shiver(I) & Shiver(q)]

(68) 我 同佢 反晒面.

I with-him/her in-SAAI-bad-terms

“I am in complete bad terms with him/her.”

SAAIq [q∈Degree of bad terms] [Be-in-bad-terms(I, him/her) & Be-in-bad-terms(q)]

(69) 你 錯晒.

you wrong-SAAI

“You are completely wrong.”

SAAIq [q∈Degree of being wrong] [Be-wrong(you) & Be-wrong(q)]

(70) 佢 叻晒 啲啲衰嘢度.

s/he smart-SAAI at-those-bad-things

“S/he is smart at all those bad things.”

SAAIx [x∈[[those bad things]]] [Good-at(s/he, x)]

Notice that in this kind of quantification, *saai3* quantifies over the degree or extent denoted by the predicate. If *saai3* quantifies over the predicate directly, we will have the wrong interpretation that all the things done by the subject is the event denoted in the VO, or all the properties of the subject are those denoted by the adjectival predicate. That is, an exhaustive or “only” meaning will be given to the relevant events and properties. Moreover, the quantification of *saai3* over degree/extent triggered by the predicate, cf. (57e), should be the last resort of *saai3*-interpretation. It occurs when there is no appropriate candidate for *saai3* to quantify over, that is, there is no [+plural] and [+specific] argument in the sentence. The degree/extent/boundary denoted by the predicate will be mapped to the restrictor, with everything else in the sentence mapped to the nuclear scope. Hence, we

have the Degree predicate mapped to the restrictors in (67) through (69), with the TP then mapped to the nuclear scope. The interpretation of these sentences then becomes “The individual realizes the property denoted in the nuclear scope to a maximum degree”.

(70) gives an example with the boundary being an explicit one. The boundary is set by the adverbial 喺啲衰嘢度 ‘at those bad things’, and such a boundary is mapped to the restrictor, giving an interpretation of “S/he is good at all the things denoted in the restrictor”. Such an adverbial thus gives an explicit boundary for *saai3* to quantify over. In the cases where such an explicit boundary is not given, *saai3* will quantify over the implicit degree denoted by the adjectival predicate, giving the reading that s/he has demonstrated his/her smart property to a maximum degree.

4.3 The Syntax-Semantics Mapping in Additive Quantifier *maai4*

Like *saai3*, the arguments associated with *maai4* can be mapped either to the restrictor or to the nuclear scope. The two possibilities are repeated as follows:

(53) Two Possible Quantificational Structures for Suffixal Quantifiers

(a) Qx [Argx] [vP (including Arg)]

(b) Qx [vP (including Arg)] [Argx]

Arg. is selected according to the general hierarchy of argument association.

The two interpretations differ in whether the selected verbal argument of the suffix is mapped to the restrictor or to the nuclear scope. When we consider the examples, it is found that *maai4* has the associated argument mapped to the nuclear scope, that is (53b) above.

(71) 我去埋 日本.

I go-MAAI Japan

(a) “For the places I have gone, Japan is one of them.”

$ADDx \in Y = \{y | Go(I, y)\} \& |Y| > 1$ [Go(I, x)] [x = Japan]

(b) Lit.: “As for Japan, I have also gone there.”

$\%ADDx \in X = |\{y | Go(I, y)\}| > 1$ [x = Japan] [Go(I, x)]

(c) Lit.: “For the going events involving me, I have also gone to Japan.”

$\%ADDe$ [Go(I, e) $\in E = \{\lambda y Go(I, y)\} > 1$] [Go(e) & Subject(I, e) & Location(Japan, e)]

The representation in (71a) has “Japan” mapped to the nuclear scope, and the reading of the sentence becomes “for all the places that I have gone to, Japan is also one of them”. The restrictor has included a set of places are the speaker has gone, and the mapping of the quantified constituent “Japan” to the nuclear scope asserts that Japan is also one of them. At the same time, since *x*, that is Japan, is added to a larger set *X* which is a set $\{y|Go(I, y)\}$. This presupposes that there should exist at least one place, *y*, to which the speaker had gone besides Japan. Such an existential presupposition⁴ is indeed triggered when we compare the relevant *maai4*-sentences with their *zo2*- and *gwo3*-counterparts, as exemplified below.

(72) 我去咗/過 日本.

I go-Perf/-Exp Japan

“I have gone to Japan (before).”

Compared with (71a), (72) simply states that the individual has gone to Japan, and makes no presupposition that the speaker has gone to places other than Japan before.

It seems that the existential presupposition is cancelled when *maai4* occurs with an object NP having the structure of [CL + N]. Previous analyses on Cantonese refer to such a reading as “single-event” reading. This is shown in the following sentences where they are in different forms: imperative sentences (cf. (73)); declarative sentences (cf. (74)); and interrogative sentences (cf. (75)).

(73) 你快啲 食埋 碗飯 佢.

you quick-er eat-MAAI CL-rice SFP

“You’d better quickly finish the entire bowl of rice as well.”

(74) 我睇埋 本書 啦.

I read-MAAI CL-book SFP

“I have finished reading the remaining parts of the book as well.”

(75) 你睇埋 本書 未?

you read-MAAI CL-book have-yet

⁴ For the details of different presuppositions triggered by grading particles like additive particle “also”, exclusive particle “only” and scalar particle “even”, please see Horn (1969) and König (1991), etc.

“Have you reading the remaining parts of the book as well?”

All the sentences above have the DO as a divisible object. Previous analyses will analyse these sentences as follows: *maai4* marks the relevant events 食碗飯 ‘eat the bowl of rice’ and 睇本書 ‘read the book’ to a completion. However, I consider that it should be the event structure not *maai4* that determines whether an event includes a completive final endpoint or not, and hence, even though the relevant sentence conveys a completive sense, it can only be a derived meaning or *maai4* and cannot be its semantic meaning.

Analyzing *maai4* from a quantificational perspective, we can see that the seemingly “single-event” reading is in fact a quantificational effect. *Maai4* interprets with the [+definite] object NPs 碗飯 ‘CL-rice’ and 本書 ‘CL-book’, respectively. All objects involved are divisible, with each being a proper subpart of the object NP. We can appeal to Krifka’s (1998) definition on incremental and quantized objects and their mapping to subevents, cf. Chapter 2, to explain the reading here. All objects in (73), (74) and (75) are incremental, since they can all be divided into proper subparts. In (73), the eating of every subpart of “the bowl of rice” are incrementally added to the eating of “the bowl of rice”; and in (74) and (75), the reading of every subpart of “the book” (i.e. the pages of the book) are incrementally added to the reading of the entire book. The additive quantification of *maai4* operates on the proper subparts of these objects, with each addition taken as an addition of the subparts of the object NP. The addition of the subparts has a cumulative force, since all subparts belong to parts of an entity, the addition of all subparts give a seemingly “completive” meaning. Hence, the existential presupposition still holds but only that what is presupposed is a subpart.

Now, we refer back to the representations in (71). The representation in (71b) has “Japan” mapped to the restrictor, and the reading of the sentence becomes “Japan is the place which also has the property that ‘I went to x’ denoted in the nuclear scope”. Moreover, it is presupposed that “Japan” is a member of the set of places I have gone to and such a set contains at least one member. (71b) has the quantified argument “Japan” mapped to the restrictor, which results in “Japan” constituting the entire restricting domain, with nothing else there. This goes against the assumption that the restrictor should include something more than “Japan”, and in such a case, “Japan” and some other place. On the other hand, one may argue that under the case of “Japan” mapped to the restrictor, it is in fact being

treated as some kind of topic, giving an interpretation of “As for Japan,”. However, if “Japan” is to be the topic, it has to be something already mentioned in the context earlier. However, (71) does not require the quantified argument “Japan” to be old or given information, as it can be a piece of information newly introduced in the context. (71) makes sense, even though it is uttered out of blue. Therefore, comparing (71a) with (71b), we can see that (71a) should be the desired reading of (71), since the restricting domain of (71) should be a set of places the speaker has gone to besides Japan, cf. (71a), instead of having “Japan” alone constituting the entire restricting domain, cf. (71b).

Notice that (71c) cannot be the correct interpretation of (71) either, since if addition applies to the event “going to Japan”, it will exclude the possibility of the speaker going to places other than Japan in the same trip. Assume the following scenario. Within a single trip, the speaker first went to Korea and then to Japan, and it was the first time the speaker has ever traveled, that is, this is the first trip in his/her life. (71) should still be true under such a scenario, as long as the presupposed set X which contains places the speaker went to contains at least one member, and under such a scenario, it contains a member “Korea”, and the sentence merely means that the x “Japan” is added to such a set. However, (71c) will wrongly predict (71) to be false under such a scenario, since there exists only one single event, that is, the event of his/her going to Korea and Japan together, which fails to satisfy the presupposition indicated in the restrictive part which requires the existence of at least one “going”-event beforehand. Since (71) simply requires the speaker to have gone to at least one place beside Japan, as long as this is satisfied, whether the speaker went to the relevant places in one single trip constituting one going-event or not is not the crucial factor. Hence, the relevant quantification cannot be over events.

A similar account can be extended to sentences where we have a VO compound, as in (76) below.

(76) 我同阿 John 錄埋音.

I for-Ah-John record-MAAI-music

(a) $\text{ADD}_x [\text{Record-for}(I, x)] [x = \text{him/her}]$

“For all the individuals for whom I have done the recording, John is one of them.”

(b) $\% \text{ADD}_{x \in X} = |\{y | \text{Record-for}(I, y)\}| > 1 [x = \text{John}] [\text{Record-for}(I, x)]$

Lit.: “As for John, I have also done the recording for him.”

- (c) %ADDe [Record(I, e) ∈ E = {λyRecord-for(I, y)} > 1] [Record(e) & Subject(I, e) & For(John, e)]

Lit: “For recording events involving me as the agent, I have also recorded for John.”

Again, only representation (76a) is the accurate mapping for (76). The interpretation of (76a) is “for all the individuals for whom I have done the recording, John is one of them”, which is the intended meaning of (76). The restrictive part is a set of individuals for whom the speaker has recorded, and since it includes a set, the semantic representation in (76a) is a legitimate one. The quantified constituent is mapped to the nuclear scope, and the sentence asserts that “John” is added to the set of individuals for whom the speaker has done the recording. Moreover, since the restrictor includes a set, with *x* being a member of a larger set *X*, it is presupposed that there exists another member besides John who is included in the set *X*.

On the other hand, in (76b), we have the quantified PP 同阿 John ‘for John’ mapped to the restrictor, and the nuclear scope asserts that John is one of the individuals having the property denoted in the nuclear scope. Like the case demonstrated in (71), (76b) has the associated PP mapped to the restrictor, and the meaning of the sentence becomes “for John, I have also recorded for him”. The problem of the representation in (76b) is that the quantified constituent “John” constitutes the entire restricting domain, and hence, the same problem that is found in (71b) also occurs here. Therefore, although the representation in (76b) has already presupposed a set of individuals for whom s/he has recorded, and such a set contains at least one member, the semantic representation in (76b) cannot be correct, due to the problem brought about by the restricting part.

Finally, (76c), the reading of additions of events is not the correct representation for (76) either, since (76) allows the occurrence of one single recording event, that is, with the speaker doing the recording for him/her and another presupposed individual simultaneously. Such a reading will be excluded if we think (76c) is the representation of (76). Therefore, contrasting among the three representations in (76), we can see that it is only when the quantified constituent is mapped to the nuclear scope can we have the correct interpretation for *maai4*-sentences.

Finally, previous analyses mention an accumulative reading of *maai4*, which can in fact be derived under the analysis of *maai4* as an additive quantifier. M&Y mention that the

accumulative meaning of *maai4* is seen in the phrases 加埋 ‘add-MAAI’ and 連埋 ‘together-MAAI’. A similar observation is made by Li et al. who claim that the meaning of *maai4* as accumulation is easily found in verbs indicating a meaning of “get”. Relevant examples are repeated below.

(77) 加埋 今個月人工, 就 夠 買 架車. (cited from M&Y)

add-MAAI this-CL-month-salary then enough buy CL-car

“With this month’s salary also included, I shall have enough money to buy a car.”

(78) 要埋 咁多 做乜 呀? (cited from Li et.al)

want-MAAI that-much do-what SFP

“You have gathered so many things as well. But for what?”

(79) 賺埋 咁多錢 唔使, 攞嚟 養老 啊? (cited from Li et. al)

earn-MAAI that-much-money not-use get-come feed-old SFP

“You earned so much money all together, but you never spent it. Are you saving it for future retirement?”

I think that the so-called accumulation reading is derived from the additive sense of *maai4*. In (77), as already mentioned, *maai4*, as an additive quantifier, gives an existential presupposition, and hence, the use of *maai4* in (77) presupposes that the salary of at least one previous month has been saved. In (78) and (79), since the quantity of object is a variable, and hence, nothing prevents the addition by *maai4* to occur more than once, leading to the accumulation reading. In other words, the so-called accumulation reading is derived when the addition by *maai4* occurs more than once. Notice that for the three sentences above, *maai4* will map the DOs “今個月人工” ‘this-month-salary’, 咁多 ‘that-much’, 咁多錢 ‘that-much-money’ in (77), (78) and (79) to the restrictor, with the vP then mapped to the nuclear scope.

Based on the above discussion, we can see that unlike *saai3*, *maai4* maps the quantified constituent to the nuclear scope, which is revealed in the following.

(80) A Mapping Hypothesis for the Additive Suffixal Quantifier *maai4*

ADD_x [vP (including Arg)] [Arg_x]
 OP RESTRICTOR NUCLEUS

where x is the constituent selected according to the syntactic hierarchy.

4.4 Formalisations in *Maai4*

Based on the same rationale, the semantics of *maai4* can be represented as follows.

(81) Syntax-semantics mapping for *maai4*:(a) Addition of individuals/things:(i) Semantic representation:

$$\lambda P \text{ADD}_x \in X = |\{y | P(y)\}| > 1 [P(x)] [x = \text{Arg}]$$
(ii) Syntax-semantics mapping:

$$\text{ADD}_x [\text{vP (Including Arg)}] [x = \text{Arg}]$$
(b) Addition of events/situations:(i) Semantic representation:

$$\text{ADDE}/s \in E/S = |\{e'/s' | P(e'/s')\}| > 1 [\text{verbal/adjektivial predicates}(e/s)]$$
(ii) Syntax-semantics mapping:

$$\text{ADDE}/s [\text{vP}(e/s)]$$

The above demonstrates a nice mapping from the syntactic representation to the semantic one. The semantic representations above can be generalized into one representation as follows:

(82) A Generalised Semantic Representation for the Additive Suffixal Quantifier *maai4*

For any predicate P, its selected constituent x, or the event e or the situation s it denotes, we have the following:

$$\lambda P \lambda y \text{ADD}_x \in X = |\{y | P(y)\}| > 1 [P(x)] [x = y]; \text{ or}$$

$$\text{ADDE}/s \in E/S = |\{e'/s' | \text{Subject in } e'/s'\}| > 1 [\text{Subject in } e/s]$$

Notice that the addition of individuals/things is the default interpretation for *maai4*,

compared to the addition of event/states. Since *maai4* does not quantify over the subject, *maai4* only associates with the verbal/adjectival predicate when the addition of individuals/things is not possible within vP. Moreover, the selected constituent is mapped to the nuclear scope, with the quantified constituent added to a set of entities having the property denoted by the restrictor. Based on the above, the *maai4*-sentences can be represented as follows, with some examples repeated for illustration.

(83) 我睇埋 呢本書 啦.

I read-MAAI that/this-CL-book SFP

“For all the books I have read, this book is one of them.”

$ADD_{x \in X} = \{y | \text{Read}(I, y)\} > 1$ [Read(I, x)] [x = this book]

(84) 阿 John 攞埋 我個本書 比佢細佬.

John take-MAAI my-that-CL-book to-his-brother

“For all the things to whom John has taken for his brother, my book is one of them.”

$ADD_{x \in X} = \{y | \text{Take}(I, y, \text{his/her brother})\} > 1$ [Take(I, x, his/her brother)] [x = my book]

(85) 嗰個遲到大王 終於 嚟埋 啦.

That-CL-king-of-late-comer finally come-MAAI SFP

“For all the individuals who have arrived, that king of late-comers has finally become one of them.”

$ADD_{x \in X} = \{y | \text{Come}(y)\} > 1$ [Come(x)] [x=that king of late-comers]

In all the above sentences, since we have a [+definite] DO, the relevant representation will be (81a). The selected DO will be mapped to the nuclear scope. The vP, which has the selected DO replaced by an individual variable *x*, is mapped to the restrictor. The restrictor then includes a set of objects/individuals having the property described in the nuclear scope, that is, the set of *x* read by me in (83); the set of *x* taken by John to his brother in (84); and the set of *x* who has arrived in (85). Notice that in (85), the grammatical subject is the base-generated DO, and the relevant quantification is performed over the trace of the base-generated DO, since *maai4* fails to associate with the agentive subject which is base-generated at the subject position.

On the other hand, when the DO is [-definite], *maai4* will select constituents other

than the DO determined by the general hierarchy of association. In the case of *maai4*, such a hierarchy will be dative arguments/postverbal PPs > preverbal PPs > verbal/adjectival predicates or VOs, and the relevant arguments need to be [+definite]. In other words, the selected Arg will be among the dative argument, the postverbal PP and the preverbal PP. Relevant examples are repeated below for illustration.

(86) 我 打埋電話 比阿 John.

I phone-MAAI-call to-Ah-John

“For all the individuals I have phone, John is one of them.”

$ADDx \in X = \{y | \text{Phone}(I, y)\} > 1$ [Phone(I, x)] [x = John]

(87) 佢 喺美國 買埋屋 啦.

s/he at-US buy-MAAI-houses SFP

“For all the places where I have bought houses, the US is one of them.”

$ADDx \in X = \{y | \text{Buying-houses}(s/he) \ \& \ \text{At}(y)\} > 1$ [Buying-houses(s/he) & At(x)] [x = US]

(88) 阿 John 錄埋音 啦.

John record-MAAI-music SFP

“John has also recorded.”

$ADDe \in E = \{e' | \text{John in } e'\} > 1$ [John record in e]

(89) 阿 John 同 Mary 錄埋音.

John with-Mary record-MAAI-music

“For all the individuals for whom John has done the recording, Mary is one of them.”

$ADDx \in X = \{y | \text{Record}(\text{John}, y)\} > 1$ [Record(John, x)] [x = Mary]

The operations involved in (86) and (87) are similar to that involved in the DO. What differs is the constituent that is mapped to the nuclear scope: in (86), we have the postverbal PP mapped to the nuclear scope, while we have the preverbal locative PP mapped to the nuclear scope in (87). The readings for (86) and (87) are “John is added to the set of individuals to whom I have phoned” and “US is added to the set of places where s/he has bought houses”, respectively. In (88), since there is no DO, IO, postverbal PP, or preverbal PP over which *maai4* can quantify, *maai4* can only quantify over the event variable denoted by the verbal predicate, and gives us a reading of the addition of an event

to the set presupposed. On the other hand, in (89), *maai4* quantifies over the preverbal PP, and gives a reading of an individual being added to the set of individuals restricted by the restrictor.

Finally, we come to examples where we have adjectival predicates and stative predicates which do not take any objects.

(90) 呢種生物 遲啲會 絕埋種.

This-CL-animal later will extinct-MAAI

“This kind of animals will also extinct very soon.”

$ADDs \in S = \{s' | \text{this kind of animals in } s'\} > 1$ [This kind of animals extinct in s]

(91) 阿明 對 Mary 客氣埋.

Ah-Ming to-Mary courteous-MAAI

“For all individuals to whom Ming is courteous, Mary is one of them.”

$ADDx \in X = \{y | \text{Courteous}(\text{Ming}) \ \& \ \text{To}(y)\} > 1$ [Courteous(Ming) & To(x)] [x = him/her]

Neither sentence above involves objects. *Maai4* is forced to select the adjectival predicate in (90), due to its failure to associate with the subject. Notice that under such a case, *maai4* will simply quantify over the situation variable denoted by the adjectival predicate, with the set of situations related to the subject presupposed. *Maai4* will select the preverbal PP in (91), according to the general hierarchy, and the selected PP is then mapped to the nuclear scope with the vP to the restrictor. A set of individuals to whom Ming is courteous is presupposed, as shown in the relevant representation in (91).

4.5 The Syntax-Semantics Mapping in Generic Quantifier *-Hoi1*

As discussed in Chapter 4, suffixal quantifier *-hoi1* which is a generic quantifier demonstrates a hierarchy of DO/IO direct arguments > indirect dative arguments/postverbal PPs > preverbal PPs (v-licensed PPs) > verbal/adjectival predicates/VOs > temporal phrases. Although *-hoi1* is claimed to be a habitual marker in previous analyses, I have instead claimed that like *maai4* and *saai3*, *-hoi1* is also an unselective binder, and it is a generic quantifier, performing quantification which needs to satisfy the following requirement.

(92) A Quantificational Requirement for *Hoi1*

–*Hoi1* is a proportional quantifier. It requires a tripartite structure, and gives an obligatory binary interpretation relating the set in the restrictor to that in the nuclear scope.

The unselective nature of –*hoi1* is supported by the possibility of *hoi1*-sentences to convey the so-called “single-event” reading. Such a reading is obtained when we have existential closure, not –*hoi1*, binding the event and situation variables. Relevant examples are repeated below.

(93) 佢 啱啱/淨話 用開 嗰部機 㗎.

s/he just-now use-HOI that-CL-computer SFP

“S/he had been using that computer just now.”

(94) 我 頭先 飲開 呢隻杯 㗎.

I just-now drink-HOI that-CL-cup SFP

“I have been using that cup just now.”

The two sentences above include temporal adverbials indicating a very short duration, and both convey single-event readings, using the terminology adopted in previous Cantonese studies. Such a reading is the result of the event or situation variable bound by the existential operator, which supports the claim that the binding of event/situation variable is not obligatory in the case of –*hoi1*. What constitutes the restrictive domain in the sentences above is the time span denoted by the temporal adverbial.

Therefore, –*hoi1*, can be treated on a par with *maai4* and *saai3*, in that they are all unselective binders. Hence, this again leads to the following two possible mappings, which are repeated below.

(53) Two Possible Quantificational Structures for Suffixal Quantifiers

(a) Qx [Argx] [vP (including Arg)]

(b) Qx [vP (including Arg)] [Argx]

Arg. is selected according to the general hierarchy of argument association.

Like *maai4*, –*hoi1* also has the associated argument mapped to the nuclear scope, that is,

(53b). Such a mapping is supported by the following example.

(95) 佢 著開 嗰件紅色衫.

s/he wear-HOI that-CL-red-sweater

(a) HOIx [Wear(s/he, x)] [x = that red sweater]

“When s/he wears something, it is that red sweater.”

(b) %HOIx [x = that red sweater] [Wear(s/he, x)]

Lit: “For that red sweater, s/he generally wears it.”

(95a) has the DO, selected according to the hierarchy, mapped to the nuclear scope, and the remaining part within the scope of *-hoi1* mapped to the restrictor. (95a) asserts that it is “that red sweater” that s/he generally wears. Hence, what is in the restrictive domain is the set of garments that is worn by him/her in (95a), and that red sweater is picked out from that set. On the other hand, (95b) has the quantified verbal argument mapped to the restrictor, and the nuclear scope asserts that it is generally the “wearing” relation that holds between him/her and that red sweater. The different mappings in (95a) and (95b) give different truth conditions to the sentence. (95a) and (95b) constitute different restrictors: (95a) includes all garments which s/he wears, while (95b) concerns only that red sweater, with other garments not at issue. (95b) can be true as long as out of all situations which have him/her and that red sweater, over half of the total situations s/he has it worn. Hence, (95b) compares all the situations or all the relations regarding him/her and that red sweater.

Assume the following scenario. Mary meets John six times every week. John only wears his red sweater twice every week, but every time Mary sees John with his red sweater, John is wearing not carrying it. Under such a scenario, (95) should be predicted to be false. However, the representation in (95b) will wrongly predict (95) to be true under such a scenario. The reason is that (95b) only requires that when Mary sees John with his red sweater, there are over 50% of the situations that John wears (not carrying) it, and whether John is often with his red sweater is not at issue. Hence, since this requirement is satisfied in the scenario, (95b) will predict (95) to be true, which is not consistent with the fact. Therefore, under such a scenario, only (95a) gives (95) the correct prediction. Since John wears his red sweater only two times a week, there are four times a week that when Mary meets John, he does not wear his red sweater. Hence, (95) should be false. Under the

representation in (95a), (95) can only be true when there are at least four times (i.e. over 50%) that John wears his red sweater. This is in fact the desired reading of (95) under such a scenario.

Therefore, comparing (95a) with (95b), we can see that only the mapping of the selected argument to the nuclear scope will give the *hoil*-sentence the correct interpretation. In other words, the *hoil*-sentence requires that when both the quantified argument and the subject are in some situations, over 50% must involve the selected constituent. Therefore, (95a) requires that when s/he wears something, say x, the x must be that red sweater, and there exists no other clothing that s/he wears more often than that red sweater, which correctly represents the meaning of (95).

Based on the above, the mapping of *-hoil* is posited below:

(96) A Mapping Hypothesis for the Generic Suffixal Quantifier *hoil*

| | | |
|------|----------------------|---------|
| HOIx | [vP (including Arg)] | [Argx] |
| OP | RESTRICTOR | NUCLEUS |

where x is the constituent selected according to the syntactic hierarchy.

The mapping hypothesis gives a tripartite structure, which demonstrates a nice mapping between *-hoil* as a proportional quantifier and its mapping mechanism. The relational reading between the restrictor and the nuclear scope means that whether the situations included in the restrictor occur once or many times is not at issue here, since what *-hoil* requires is that it is generally the case that when the situation or the event occurs, it involves the things/objects denoted in the nuclear scope. In other words, the relevant genericity is relative to the total number occurrences of situations or events denoted in the restrictor, hence, giving a proportional reading not a cardinal one.

4.6 Is *-hoil* a Generic or a Universal Quantifier?

One may have doubts about the type of quantification conducted by *-hoil*, namely, whether it is a universal or generic quantification. Roughly speaking, universal quantification should allow no exception, while generic quantification, representing a generalized pattern, should permit exception. Consider the following examples.

- (97) 佢 用開 左手, 不過 間唔中 都 會 用吓 右手.
 s/he use-HOI left-hand, but occasional also will use-ASP right-hand
 “S/he generally uses left hands, but occasionally s/he also uses his/her right hand.”
- (98) 佢 去開 樓下間餐廳 食飯,
 s/he go-HOI this-CL-restaurant eat-rice
 不過 又 唔係 餐餐去 嘅.
 but also not-be every-meal go SFP
 “S/he generally dines at the restaurant downstairs, but of course not every meal.”

Both sentences above have *-hoil* appearing in the first clause, with the second clause denoting a situation which can be considered as an exception to the pattern described in the first clause. The second clause in (97) (佢)間唔中會用吓右手 ‘s/he occasionally will use right hand’ describes the situation *e* where s/he uses his/her right hand. If *-hoil* is a universal quantifier, (97) should run into contradiction, since the first clause 佢用開左手 ‘s/he use-HOI left hand’ has an interpretation equivalent to “s/he only or always uses left hand”, and hence has restricted all events which involve his hand to be his left hand. A similar explanation can be given to (98). The two clauses in (98) describe two opposite situations, with one being going to the restaurant downstairs to have meals, and the other being not going to the restaurant downstairs to have meals. Again, if *-hoil* is a universal quantifier, the situation described by the second clause is impossible to occur, and (98) would be predicted to be semantically ill-formed. The well-formedness of (98) demonstrates that *-hoil* is a generic quantifier which allows exceptions, rather than being a universal quantifier.

Therefore, as a generic quantifier, *-hoil* requires establishing a relation between a restriction (or, restrictor) and a scope. The semantics of *-hoil* can be represented as follows:

(99) A Generalised Semantic Representation of the Generic Suffixal Quantifier *-hoil*

For any predicate P, its selected constituent x, or the event *e* or the situation *s* it denotes, we have the following:

$\lambda P \lambda y \text{HOI}x [P(x)] [x = y]$ Or

$\lambda P \lambda Q \text{HOI} \langle P \rangle [P(\text{Subject})] [P = Q]$

4.7 Formalisations in *-Hoi1*

In order to see how the above mapping hypothesis works here, we can see some repeated examples below.

(100) 有錢人 去開 貴價餐廳.

Rich-people come-HOI expensive-restaurant

“When rich people go somewhere, it is expensive restaurants.”

HOIx [Come(rich-people, x)] [x = expensive restaurants]

(101) 我俾開 呢啲 papers 俾佢.

I give-HOI these-papers to-him/her

“When I give him/her something, it is these papers.”

HOIx [Give(I, x, him/her)] [x = these papers]

From the representations above, we can see that *-hoi1* is a generic quantifier mapping the selected [+plural] constituent to the nuclear scope and the vP to the restrictor. *-Hoi1* selects the DO “expensive restaurants” and “these papers” in (100) and (101), respectively, giving a meaning that when the relevant situations described in the restrictor occur, it involves the DO in the nuclear scope.

A similar operation can be applied to sentences with VO compounds. Beside DOs, *-hoi1* may select the dative argument or the preverbal PP, but not the subject. Relevant examples are given below for illustration.

(102) 我同佢哋 食開飯.

I with-them have-HOI-meal

“When I dine with someone, it is them.”

HOIx [Dine(I) & With(x)] [x = them]

(103) 我派開信 去嗰幾間公司度.

I send-HOI-letters to-those-few-CL-company-location

“When I deliver letters to somewhere, it is those few companies.”

HOIx [Letter-delivery(I) & to(x)] [x = those companies]

(104) 我喺香港公園 散開步.

I in-Hong-Kong-Park jog-HOI

“When I jog, I jog in Hong Kong Park.”

HOIx [Jog(I, x)] [x =Hong Kong Park]

When we have VO compounds like 食飯 ‘dine’, 派信 ‘letter-delivery’ and 散步 in (102), (103) and (104), respectively, *-hoiI* will select either the dative argument/postverbal PP or the preverbal PP, according to the hierarchy, with the relevant verbal/adjectival predicate being the last option. The selected constituent will be mapped to the nuclear scope. The interpretation will then be “when the relevant event described in the restrictor occurs, it involves the selected constituent in the nuclear scope”. *-HoiI* will select the preverbal PP 同佢哋 ‘with them’, the postverbal PP 去嗰幾間公司度 ‘to those few companies’ and 喺香港公園 ‘in Hong Kong Park’ in (102), (103) and (104), respectively, since these constituents have priority over the VOs in the general hierarchy. The readings of (102), (103) and (104) then become “when I dine with someone, it is them”, “when I deliver letters to somewhere, it is those few companies”, “when I jog, it is in the Hong Kong Park”, respectively. All sentences satisfy the plurality condition of *-hoiI* due to the possibility of the relevant situations or events to recur, and the sentences are thus well-formed.

When there is no argument or adjunct in the sentence for *-hoiI* to bind, the general hierarchy will predict that *-hoiI* will quantify over the verbal/adjectival predicate directly, which are exemplified below.

(105) 後生仔 跑開步 呀.

Youngsters jog-HOI SFP

“Young people generally jog.”

HOI<P> [P(youngsters)] [P = Jog]

(106) 佢 打開波.

s/he play-HOI-ballgames

“S/he generally plays ballgames.”

HOI<P> [P(s/he)] [P = Play-ballgames]

Since *-hoiI* fails to associate with the subject in (105) and (106) above, *-hoiI* is forced to interpret with the predicates, and what *-hoiI* quantifies over is the property of the subject. Hence, the interpretation is “the property that the subject generally has is that denoted in the

nuclear scope”. Therefore, the proportional reading is a relation between two sets, with the restrictive set being the set related to the subject, and the nuclear scope the set denoted by the VO. Notice that such quantification represents the last resort of binding in *-hoil*, and occurs only when there is no constituent in the sentence available for *-hoil* to bind. The relevant representations are given in (105) and (106) above.

The final case is *-hoil* with adjectival predicates and stage-level statives which cannot take a DO. The relevant representation is shown in (107), which is similar to the case of VO, cf. (102) through (106), in the way that neither has a DO argument. (107) is given below to see how the semantics is represented.

(107) 我對佢 客氣開.

I to-him/her courteous-HOI

“When I am courteous to someone, it is him/her.”

HOIx [Be-courteous(I) & To(x)] [x = him/her]

In (107), the preverbal PP is mapped to the nuclear scope, with everything else within the scope of *-hoil* mapped to the restrictor. The interpretation of (107) is “when I am courteous to someone, it is him/her”. Since *-hoil* does not bind the situation variable, (107) merely requires when the speaker is courteous to someone, it involves him/her”, and it does not matter whether the speaker is seldom or always courteous to people or not.

Like the case of eventives in (105) and (106), when we have no argument matching the features of *-hoil* in adjectival predicates, the representation will be as follows.

(108) 佢個頭 亂開 㗎啦.

His/her-hair messy-HOI SFP-SFP

“His hair is generally in a mess.”

HOI<P> [P(his/her hair)] [P = messy]

-HoiI will select the adjectival predicate in (108), due to its failure to interpret with the subject. In the representation in (108), the restrictor includes all properties related to his/her hair, with the adjectival predicate mapped to the nuclear scope. Hence, *-hoil* relates two sets in (108), with one involving his/her hair and the other, the set related to being messy.

For stage-level statives, their interpretations resemble that of eventives. *-Hoi1* will quantify over the constituent selected from the hierarchy, as shown in the following.

Stage-level stative verbs

(109) 本書 擺開 喺張枱度.

CL-table put-HOI on-CL-table-location

“When the book is put somewhere, it is on the table.”

HOIx [Put(the book, x)] [x = the table]

-Hoi1 selects the postverbal PP in (109), giving the interpretation of “when the book is placed somewhere, it is on the table”.

In the cases of individual-level statives, the relevant quantification of *-hoi1* can be satisfied as long as there are variables that can be mapped to the restrictor. Relevant examples are repeated below for illustration.

(110) 佢 一向 鍾意開 “三國誌”.

S/he for-long like-HOI “A Romance of Three Kingdoms”

“S/he likes “A Romance of Three Kingdoms for long.”

$\exists t \subset I \text{ HOI}t' [t' \in t] [S/he \text{ likes Samkokji at } t']$

(111) 我不嬲 識開 阿明.

I for-long know-HOI Ah-Ming

“I know Ah Ming for long.”

$\exists t \subset I \text{ HOI}t' [t' \in t] [I \text{ know Ah Ming at } t']$

(110) and (111) involve individual-level statives which are not compatible with *-hoi1* without the durative adverbials. Both sentences become well-formed when durative adverbials are introduced into the relevant sentences. The function of the preverbal durative adverbial is to give the originally individual-level predicates a temporal interpretation, restricting their interpretation to a certain temporal domain. The time variable triggered by the durative adverbial will be quantified over by *-hoi1*, resulting in the representations in (110) and (111).

5. A General Mapping Hypothesis in Suffixal Quantifiers

From the discussion above, we can see that the general hierarchy which consists of constituents of different grammatical function is crucial in determining the tripartite structure mapping in suffixal quantification. However, there is no unified mapping for all suffixal quantifiers, with the relevant mapping determined by individual suffixal quantifiers. Based on the discussion above, I will propose a general mapping hypothesis for suffixal quantifiers as follows:

(112) A General Mapping Hypothesis for Suffixal Quantifiers

Verbal suffixes, as suffixal quantifiers, trigger a tripartite structure mapping, which map the selected constituent to the restrictor or the nuclear scope, depending on individual suffixal quantifiers, with the rest of the sentence mapped to the nuclear scope or the restrictor, correspondingly. The quantified constituent is selected according to the general hierarchy of grammatical functions below.

DO/IO arguments > dative arguments/postverbal PPs > preverbal PPs (v-licensed PPs) > subjects > verbal predicates/adjectival predicates/stative verbs/VOs

No matter where the selected constituent is mapped, the mapping demonstrated by affixal quantification differs significantly from the TP-vP and the TP-syntactic predicate partitions in Diesing's Mapping Hypothesis and Tsai's Extended Mapping Hypothesis. Hence, a third kind of mapping, on top of those proposed by Diesing and Tsai, needs to be identified.

One crucial distinction between A-quantification and D-quantification concerns the role of focal mapping in the relevant quantification, with focus determining the mapping in the former but not the latter. An important question now is what is the role of focus in affixal quantification? Hence, before concluding which type of quantifiers suffixal quantifiers are, in the coming chapter, I will examine the interaction between suffixal quantifiers and focus.